

**THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MASSACHUSETTS**

THE HOLMES GROUP, INC.,

Plaintiff,

v.

WEST BEND HOUSEWARES, LLC and  
FOCUS PRODUCTS GROUP, LLC,

Defendants.

Civil Action No. 05-CV-11367 WGY  
(Alexander, M.J.)

**DEFENDANTS' MEMORANDUM IN SUPPORT OF THEIR  
MOTION FOR SUMMARY JUDGMENT OF NON-WILLFULNESS**

Michael E. Husmann  
Joseph T. Miotke  
MICHAEL BEST & FRIEDRICH LLP  
100 East Wisconsin Avenue, Suite 3300  
Milwaukee, Wisconsin 53202-4108  
Telephone: 414-271-6560

Martin L. Stern  
MICHAEL BEST & FRIEDRICH LLP  
180 North Stetson Avenue, Suite 2000  
Chicago, Illinois 60601-6710  
Telephone: 312-222-0800

Lee Carl Bromberg, BBO #058480  
Erik Paul Belt, BBO #558620  
BROMBERG & SUNSTEIN LLP  
125 Summer Street  
Boston, Massachusetts 02110-1618  
Telephone: 617-443-9292

December 1, 2006

*Attorneys for Defendants*

## **INTRODUCTION**

Plaintiff The Holmes Group, Inc., (“Holmes”) brought this action against Defendants West Bend Housewares, LLC and Focus Products Group, LLC (collectively “West Bend”) for infringement of U.S. Patent Nos. 6,573,483 (“the ‘483 patent”) and 6,740,855 (“the ‘855 patent”). Without a basis in fact or law, Holmes asserts that the alleged infringement is “willful.”

Rather than disregarding Holmes’ patent rights, West Bend took affirmative action upon learning of the patents to ensure that it did not infringe those patents. West Bend retained experienced patent counsel, Attorney Martin L. Stern, early in the development stages of the accused product. Attorney Stern counseled West Bend throughout development of the accused product to ensure that the product did not infringe Holmes’ patents and rendered oral and written non-infringement opinions to West Bend. West Bend relied on those opinions and took no action in disregard of Holmes’ patent rights. Holmes has no reasonable case of infringement, let alone a “clear and convincing” case of willful infringement. The undisputed facts show that West Bend took appropriate steps to avoid infringement and had a good faith basis based on advice of patent counsel to believe that its accused product does not infringe.

## **ARGUMENT**

Summary judgment is to be granted if “the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law.” Fed. R. Civ. P. Rule 56(c).

Where, as here, Holmes has the burden of proof on the ultimate issue by clear and convincing evidence, summary judgment for West Bend is appropriate unless Holmes presents

that clear and convincing evidence in response to West Bend's motion. *Celotex Corp. v. Catrett*, 477 U.S., 317, 322 (1986). Since Holmes has no clear and convincing proof of willful infringement, neither this Court nor West Bend should be forced to waste time and money on a trial of the willfulness issue. Summary judgment should therefore be granted dismissing Holmes' allegation of willful infringement.

#### **I. The Legal Standard That Must Be Met To Prove Willful Infringement**

In order to prove that infringement is "willful" the patent holder must present clear and convincing evidence that the accused infringer had knowledge of the patent, acted in disregard of the patent, and had no reasonable basis for believing that he or she had the right to do the acts which constitute the infringement. *Am. Med. Sys., Inc. v. Med. Eng'g Corp.*, 6 F.3d 1523, 1530 (Fed. Cir. 1993), *cert. denied*, 114 S. Ct. 1647 (1994). Because the question of willfulness "is by definition a question of the infringer's intent," the patent holder must present evidence of a "willful" intent. *Ortho Pharm. Corp. v. Smith*, 959 F.2d 936, 944 (Fed. Cir. 1992). The framework for ascertaining willfulness focuses upon a failure of the accused infringer:

- (1) to seek and obtain legal advice from counsel before undertaking an infringing activity,
- (2) to obtain an "objectively competent opinion" of counsel containing a thorough analysis, or
- (3) to promptly and responsibly implement the legal advice.

Willfulness is shown only when, "upon consideration of the totality of the circumstances, clear and convincing evidence establishes that the infringer acted in disregard of the patent, that the infringer had no reasonable basis for believing it had a right to engage in the infringing acts." *Electro Med. Sys., S.A. v. Cooper Life Scis., Inc.*, 34 F.3d 1048, 1056 (Fed. Cir. 1994).

## **II. West Bend Did Not Act In Willful Disregard of Holmes' Patent Rights**

West Bend began working with a Chinese Company named "OEM" as early as 2002 to develop the product which Holmes now alleges infringes its patents. Declaration of Michael Carpenter (hereinafter "Carpenter Decl.") ¶ 2; Carpenter Decl., Ex. A at 2831. In April of 2004, OEM became aware of the '483 patent and informed West Bend of its existence. *Id.* OEM, who had a business relationship with Holmes, advised West Bend that "[i]t is very important that both West Bend and OEM check these patents very carefully . . . and ensure that [West Bend's electronic slow cooker] will not infringe the Holmes patent claims." *Id.*

The day after first learning of Holmes' '483 patent, West Bend contacted its patent attorney, Attorney Martin L. Stern, who had been advising West Bend and Focus on intellectual property matters for several years. Carpenter Decl. Ex. A at 2831. Attorney Stern obtained copies of the '483 patent and its file history as well as for the '855 patent upon learning of its existence. Carpenter Decl. Ex. C.

Over the next ten months, West Bend worked with its patent counsel and regularly communicated with Attorney Stern concerning the structure and operation of the product being developed. Carpenter Decl. ¶ 3. West Bend regularly provided its patent counsel with cross-sectional renderings and photographs of its proposed product, a draft of the operation and specification manual for its proposed slow cooker product and a sample so that it could be evaluated against Holmes' patents. *Id.*; Ex. B. Attorney Stern advised West Bend to locate the electronic components used in the product inside the heating unit within housings also mounted inside the heating units. Carpenter Decl. ¶ 4. Following the advice of its patent counsel, West Bend settled on a design in which the electrical components were all mounted within the heating unit. *Id.*

During the development period, in January 2005, OEM advised West Bend of conversations it had had with the president of Holmes. Carpenter Decl. ¶ 5. OEM stated that Holmes was aware of OEM's relationship with West Bend and that West Bend was developing a product to compete with Holmes' programmable slow cooker. *Id.* Holmes threatened to remove its business from OEM as a result of the relationship and advised OEM that Holmes had spent \$4.6 million dollars to keep Hamilton Beach out of the market. *Id.* Based on the conversation with the president of Holmes, OEM advised West Bend that it should be prepared to spend \$5 million to defend Holmes' patent infringement lawsuit the day that West Bend's programmable cooker hits the market. *Id.*

The following month, Attorney Stern delivered to West Bend a detailed written opinion explaining why West Bend's proposed programmable cooker did not infringe Holmes' patents. Carpenter Decl. ¶ 6 and Ex. C. West Bend relied on this opinion and introduced the accused product to Wal-Mart in mid-February of 2005 and began shipping the product in late May 2005. Carpenter Decl. ¶ 7. The product was first available to the public on Wal-Mart's shelves in mid-June, 2005. *Id.* Holmes filed this infringement within two weeks thereafter. *Id.*

These facts establish West Bend's good faith effort in avoiding infringement of the '483 and '855 patents. "The primary consideration [in determining willful infringement] is whether the infringer, acting in good faith and upon due inquiry, had sound reason to believe that it had the right to act in the manner that was found to be infringing." *SRI Int'l, Inc. v. Advanced Tech. Labs.*, 127 F.3d 1462, 1464-65 (Fed. Cir. 1997).

### **III. Holmes Has No Evidence of Willful Infringement**

During the course of discovery in this action, West Bend requested that Holmes specify the basis for its claim of willful infringement. In response Holmes stated:

On October 14, 2004, counsel for Homes sent a letter to West Bend placing them on notice of Homes U.S. Patent Nos. 6,573,483 and 6,740,855 (the Holmes patents-in-suit). On October 26, 2004, West Bend's counsel Martin Stern of Michael Best & Friedrich, LLP advised counsel for that they represented West Bend in intellectual property matters. On April 22, 2005, counsel for Holmes advised Mr. Stern that Holmes had been granted U.S. Patent No. 6,872,921. Notwithstanding the actual notice of the Holmes patents-in-suit, West Bend imported, distributed and sold slow cookers which infringe the Holmes patents-in-suit in willful wanton disregard of the Holmes patents-in-suit.

Ex. D, Holmes' Resp. to Def.'s Interrog. # 8.

In response to a 30(B)(6) notice of deposition requesting testimony as the basis for Holmes' claim of willful infringement, Holmes testified in full as follows:

- Q. Okay. In the complaint in this case Holmes has alleged that West Bend is willfully infringing Holmes's patents. What is the basis for the allegation of willfulness?
- A. We know that they were aware that our product existed.
- Q. Okay.
- A. And we know that they were aware that we had patents on our products.
- Q. Okay.
- A. And that they were informed of that --
- Q. Okay.
- A. -- by us.
- Q. All right.
- A. And that they still came out with the product.
- Q. Any other basis?
- A. I think that's it. I'd have to defer most to legal counsel on that one if there's anything more than that.

(Ex. E, Holmes' 30(B)(6) Dep. p.52, ll.16-p.53, ll. 11.)

Knowledge of the patent and a competing product is not evidence that a competitor is willfully infringing a patent.

[K]eeping track of a competitor's products and designing new and possibly better or cheaper functional equivalents is the stuff of which competition is made and is supposed to benefit the consumer. One of the benefits of a patent system is its so-called "negative incentive" to "design around" a competitor's products, even when they are patented, thus bringing a steady flow of innovations to the marketplace. It should not be discouraged by punitive damage awards except in cases where conduct is so obnoxious as clearly to call for them. The world of competition is full of "fair fights" . . . .

*Westvaco Corp. v. Int'l Paper Co.*, 991 F.2d 735, 745 (Fed. Cir. 1993) (quoting *State Indus., Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1235-36 (Fed. Cir. 1985)) (reversing a finding of willfulness where defendant relied in good faith on timely and competent opinions of patent counsel and did not copy patentee's product, but attempted to design around it). Holmes has no evidence, let alone clear and convincing evidence, of willful infringement. To the contrary, it is undisputed that West Bend sought, obtained and followed competent legal advice from its patent counsel to design the accused product so that it does not infringe. West Bend had a good faith basis for its belief that it does not infringe, and Holmes has no evidence whatsoever to the contrary.

### **CONCLUSION**

For the foregoing reasons, West Bend respectfully requests that the Court grant summary judgment that West Bend has not willfully infringed the '483 and '855 patents.

Dated: December 1, 2006

Respectfully submitted,

WEST BEND HOUSEWARES, LLC  
FOCUS PRODUCT GROUP, LLC

*By their attorneys,*

/s/ Erik P. Belt

Erik P. Belt, BBO# 558620  
BROMBERG & SUNSTEIN LLP  
125 Summer Street  
Boston, Massachusetts 02100-1618  
Tel.: 617.443.9292  
Fax: 617.443.0004  
E-mail: [ebelt@bromsun.com](mailto:ebelt@bromsun.com)

Of Counsel:

Martin L. Stern  
MICHAEL BEST & FRIEDRICH LLP  
401 N. Michigan Ave., Ste. 1400  
Chicago, Illinois 60611  
Tel.: 312.222.0800  
E-mail: [mlstern@michaelbest.com](mailto:mlstern@michaelbest.com)

Michael E. Husmann  
Joseph T. Miotke  
MICHAEL BEST & FRIEDRICH LLP  
100 E. Wisconsin Ave., St. 3300  
Milwaukee, Wisconsin 53202-4108  
Tel.: 414.271.6560  
Fax: 414.277.0656  
E-mail: [mehusmann@michaelbest.com](mailto:mehusmann@michaelbest.com)

### **CERTIFICATE OF SERVICE**

I certify that, on the above date, this document filed through the ECF system will be sent electronically to the registered participants as identified on the Notice of Electronic Filing (NEF) and paper copies will be sent to those indicated as non registered participants.

/s/ Erik P. Belt

Erik Paul Belt, BBO # 558620

**THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MASSACHUSETTS**

THE HOLMES GROUP, INC.,

Plaintiff,

v.

WEST BEND HOUSEWARES, LLC and  
FOCUS PRODUCTS GROUP, LLC,

Defendants.

Civil Action No. 05-CV-11367 WGY  
(Alexander, M.J.)

**DECLARATION OF MICHAEL CARPENTER**

I, Michael Carpenter, hereby give the following declaration based on personal knowledge, and if called to testify, would state:

1. I am the President of West Bend Housewares, LLC. I have held this position since 2003.
2. West Bend began working with a Chinese Company named “OEM” as early as 2002 to develop the product which Holmes now alleges infringes its patents. In April of 2004, OEM became aware of the ‘483 patent and informed West Bend of its existence. OEM, who had a business relationship with Holmes, advised West Bend that “[i]t is very important that both West Bend and OEM check these patents very carefully . . . and ensure that [West Bend’s electronic slow cooker] will not infringe the Holmes patent claims.” A true and correct copy of an e-mail documenting this statement is attached as Exhibit A and Bates numbered WB 002831-32.
3. Between April 2004 and February 2005, West Bend worked with its patent counsel and regularly communicated with Attorney Stern concerning the structure and operation of the product being developed. During this time, West Bend provided its patent counsel with

cross-sectional renderings and photographs of its proposed product, a draft of the operation and specification manual for its proposed slow cooker product, and a sample to be evaluated against Holmes' patents. True and correct copies of e-mails documenting this work are attached as Exhibit B and Bates numbered WB 002774-85 and WB 003145-3149.

4. Attorney Stern advised West Bend to locate the electronic components used in the product inside the heating unit within housings also mounted inside the heating unit. Following the advice of its patent counsel, West Bend settled on a design in which the electrical components were all mounted within the heating unit.

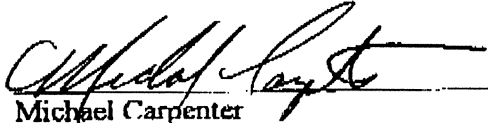
5. During the development period, in January 2005, OEM advised West Bend of conversations it had had with the president of Holmes. OEM stated that Holmes was aware of OEM's relationship with West Bend and that West Bend was developing a product to compete with Holmes' programmable slow cooker. Holmes threatened to remove its business from OEM as a result of the relationship and advised OEM that Holmes had spent \$4.6 million dollars to keep Hamilton Beach out of the market. Based on the conversation with the president of Holmes, OEM advised West Bend that it should be prepared to spend \$5 million to defend Holmes' patent infringement lawsuit the day that West Bend's programmable cooker hits the market.

6. In February 2005, West Bend received a detailed written opinion from Attorney Stern explaining why West Bend's proposed slow cooker did not infringe Holmes' patents. A true and correct copy of this written opinion is attached as Exhibit C and Bates numbered WB002352-2569.

7. In reliance upon the opinion of its patent counsel, West Bend introduced the accused product to Wal-Mart in mid-February 2005 and began shipping the product in late May 2005. The product was first available to the public on Wal-Mart's shelves in mid-June 2005. Holmes filed this infringement lawsuit within two weeks thereafter.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 11/30, 2006.

  
Michael Carpenter

# EXHIBIT A

Page 1 of 2

**Stern, Martin L.**

---

**From:** Keith Jaffee [keith@focusinv.com]  
**Sent:** Wednesday, April 14, 2004 3:40 PM  
**To:** Stern, Martin L.  
**Subject:** FW: Holmes Patent File for Programmable (Electronics) Slow Cooker

call me

-----Original Message-----

**From:** Mike Carpenter  
**Sent:** Tuesday, April 13, 2004 7:37 AM  
**To:** Keith Jaffee  
**Subject:** FW: Holmes Patent File for Programmable (Electronics) Slow Cooker

Keith,

If you agree that we need to do some checking on this patent would you please forward this to Marty while I'm gone!

Mike Carpenter  
West Bend Housewares  
1100 Schmidt Road  
PO Box 2780  
West Bend WI 53090  
Ph: 262/334-6953

Focus Investments  
120 Lakeview Parkway  
Vernon Hills IL. 60061  
O-847/968-3896  
C-920/248-3258

-----Original Message-----

**From:** Hugh Mackay [mailto:hughm@oemelectric.com.tw]  
**Sent:** Tuesday, April 13, 2004 4:50 PM  
**To:** Mike Carpenter  
**Cc:** Gary Shabino; Howard Kaney; Gary Sarauer; YFL USA (Ian Pasalich) ; YFL USA (Ian Pasalich - sbc global)  
**Subject:** Holmes Patent File for Programmable (Electronics) Slow Cooker

Mike

We started working on the programmable electronic slow cooker project with WB two years ago. We have always known that Holmes had some sort of patent or patents for their electronic slow cookers. Bill Dobson tried many times to search for this Holmes patent, but he was unsuccessful in finding it.

We have now found the Holmes patents for electronic slow cookers, which I have attached.

It is very important that both West Bend and OEM check these patents very carefully. We will then need to compare notes and then define the actual function that we want to program into the I/C, and ensure that it will not infringe the Holmes patent claims. Howard will also need to ensure that our PCB mechanical location and construction does not infringe their patents.

Regards

4/15/2004

HIGHLY CONFIDENTIAL  
ATTORNEYS' EYES ONLY

WB 002831

Page 2 of 2

Hugh

**HIGHLY CONFIDENTIAL  
ATTORNEYS' EYES ONLY**

4/15/2004

**WB 002832**

# EXHIBIT B

Page 1 of 1

**Thompson, Nancy K.**

---

**From:** Stern, Martin L.  
**Sent:** Tuesday, August 24, 2004 4:59 PM  
**To:** Thompson, Nancy K.; Sufrin, Barry W.  
**Subject:** FW: Requested document - Electronic Slow Cooker Spec/instruction manual

-----Original Message-----

**From:** Howard Kaney [mailto:hkaney@westbend.com]  
**Sent:** Tuesday, August 24, 2004 4:02 PM  
**To:** Stern, Martin L.  
**Subject:** Requested document - Electronic Slow Cooker Spec/instruction manual

As promised.

howard

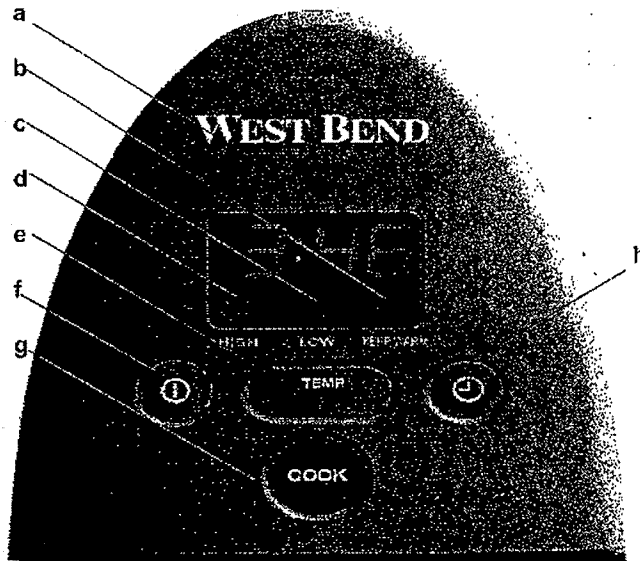
HIGHLY CONFIDENTIAL  
ATTORNEYS' EYES ONLY

WB 002774

8/25/2004

**West Bend Electronics Slow Cooker Project  
OEM's Version of Instruction Manual**

14<sup>th</sup> Jun 2004  
Revision 6.1




**Control Panel**

- a Display of Cooking Time
- b Keep warm indicator light
- c Low indicator light
- d High indicator light
- e Cooking Temperature selection button (TEMP Button)
- f ON/OFF Button
- g COOK Button
- h Cooking time selection button (TIMER Button)




This slow cooker has 2 cooking modes for your cooking preference:

- a) Programmed Mode. (Cook with Selection of Cooking Time)
- b) Simple Mode. (Cook without Selection of Cooking Time)

**I. To Switch ON the slow cooker**

1. Press  ON/OFF Button.
2. LED Display will light up showing "On" and Cooking Temperature will default to High.



Note: if  COOK Button or  TIMER Button or  TEMP Button is **NOT** pressed after the unit has been Powered ON, the unit automatically shuts off after 5 minutes. A safety Feature of West Bend Housewares.

**II. To Switch OFF the slow cooker**

1. Press  ON/OFF Button.

HIGHLY CONFIDENTIAL.  
ATTORNEYS' EYES ONLY

**West Bend Electronics Slow Cooker Project**  
**OEM's Version of Instruction Manual**

14<sup>th</sup> Jun 2004  
 Revision 6.1


## COOKING

### A. Cooking in Programmed Mode (Cook with Selection of Cooking Time)

#### I. To Switch ON the slow cooker


1. Turn ON the unit by pressing  ON/OFF Button.

#### II. Selection of Cooking Temperature

1. Press  TEMP Button to select the desired Cooking Temperature
2. Cooking Temperature :
  - a. High
  - b. Low
  - c. Keep Warm


**Note:** If Keep Warm is selected as the Cooking Temperature, you will not be able to program Cooking Time.

#### III. Selection of Cooking Time


1. Press  TIMER Button to turn ON the function.
2. LED Display will show a flashing "4:00". The cook time "4:00" means that the unit will cook for 4 hours in the selected cooking temperature. (Cooking Time is defaulted to the recommended 4 hours)



HIGHLY CONFIDENTIAL  
 ATTORNEYS' EYES ONLY

3. With each press  TIMER Button, you will add the cooking time by one hour. LED Display will show "5:00", "6:00", "7:00" until "12:00", "0:00" and back to "4:00"

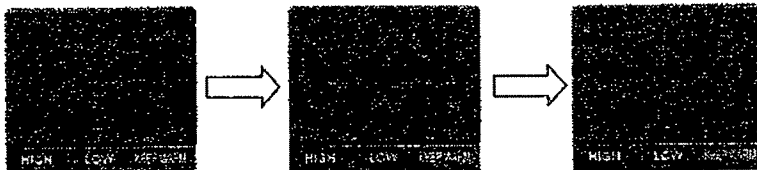
- Example: 4:00, 5:00, 6:00, 7:00, 8:00, 9:00, 10:00, 11:00, 12:00, 0:00

4. Once preferred Time is selected, press  COOK Button to start cooking.

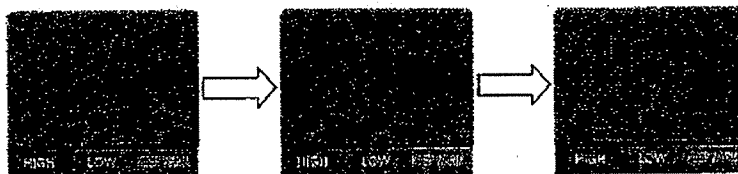
**West Bend Electronics Slow Cooker Project**  
**OEM's Version of Instruction Manual**

14<sup>th</sup> Jun 2004  
 Revision 6.1


5. The LED Display will show the selected time and start counting down. For example if the timer is set to "6:00", it will count down to "5:59" downwards.







6. At the end of the programmed time, LED Display will show "0:00". The crockery cooker will automatically shift to KEEP WARM.

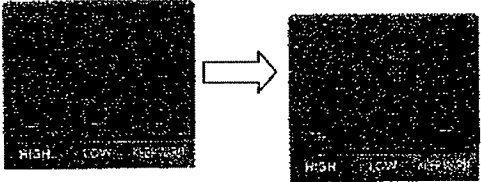


**IV. To Switch OFF the slow cooker**


1. Press  ON/OFF Button.

**Changing the programmed time of your cooking process:**

- Simply press  **TIMER** Button and select the desired time again and press  **COOK** Button to start the countdown of the newly set time.
- For example, if the timer is at "1:54", once press  **TIMER** Button, it will display "2:00". Every press of the  **TIMER** Button, the new cooking time will increase by 1 hour, "3:00", "4:00" until "12:00", "0:00", "01:00".




**Changing the Cooking Temperature during your cooking process:**



- Simply press  **TEMP** Button again to select your desired cooking

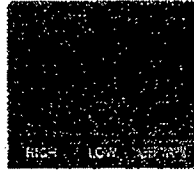
**West Bend Electronics Slow Cooker Project**  
**OEM's Version of Instruction Manual**

14<sup>th</sup> Jun 2004  
 Revision 6.1

temperature and press  **COOK** Button to start.  
 (Do note that if **KEEP WARM** is selected, the programmed cooking time will be cancelled and the unit will switch to **Simple Mode**.)

**Change to Simple Mode while in Programmed Mode:**


- To cancel programmed cooking time cooking (Programmed Mode) and switch to cook without selection of cooking time (Simple Mode).
- Simply press  **TIMER** Button and select "0:00" and press  **COOK** Button to start.





**B. Cooking in Simple Mode**

(Cook without Selection of Cooking Time)

**I. To Switch ON the slow cooker**

1. Turn ON the unit by pressing  **ON/OFF** Button

**II. Selection of Cooking Temperature**

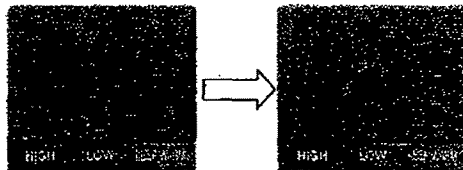
1. Press  **TEMP** Button to select the desired Cooking Temperature
2. Cooking Temperature :
  - a. High
  - b. Low
  - c. Keep Warm
3. Once preferred Cooking Temperature is selected, press  **COOK** Button to start cooking.
4. Your crockery cooker will begin cooking at the selected Cooking Temperature. The LED Display will start counting up to give you the total cooking time.

**Note:** The Maximum Cooking Time is 20 hours and the unit will auto shut off. A safety feature of West Bend Housewares.

HIGHLY CONFIDENTIAL  
 ATTORNEYS' EYES ONLY

**West Bend Electronics Slow Cooker Project  
OEM's Version of Instruction Manual**



14<sup>th</sup> Jun 2004  
Revision 6.1



**III. To Switch OFF the slow cooker**

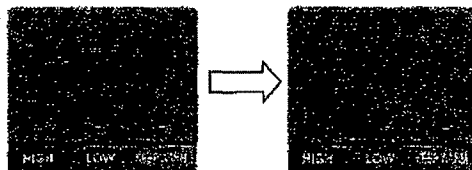
1. Press  ON/OFF Button.

**C. Disable Automatic shut off feature**

- i. For your comfort, the crockery cooker will automatically shut off after a maximum cooking time of 20 hours.
- ii. If you wish to disable this feature for this duration of the unit being ON, you may do so by pressing the  ON/OFF and  TIMER buttons at the same time.

**Note:** If the unit is ON more than 20 hours, the LED Display will display “-:-” after “19:59”. The unit will continue to be working until you switch it OFF by pressing

-  ON/OFF Button.



**HIGHLY CONFIDENTIAL.  
ATTORNEYS' EYES ONLY**

Page 1 of 1

**Stern, Martin L.**

---

**From:** Howard Kaney [hkaney@westbend.com]  
**Sent:** Tuesday, August 24, 2004 4:02 PM  
**To:** Stern, Martin L.  
**Subject:** Requested document - Electronic Slow Cooker Spec/instruction manual

As promised.

howard

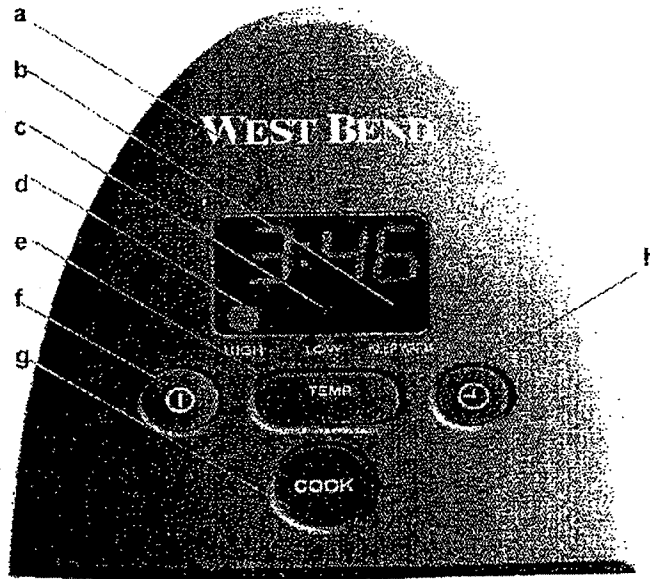
**HIGHLY CONFIDENTIAL  
ATTORNEYS' EYES ONLY**

**WB 002780**

8/24/2004

**West Bend Electronics Slow Cooker Project**  
**OEM's Version of Instruction Manual**

14<sup>th</sup> Jun 2004  
 Revision 6.1




**Control Panel**

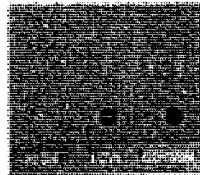
- a Display of Cooking Time
- b Keep warm indicator light
- c Low indicator light
- d High indicator light
- e Cooking Temperature selection button (TEMP Button)
- f ON/OFF Button
- g COOK Button
- h Cooking time selection button (TIMER Button)




**This slow cooker has 2 cooking modes for your cooking preference:**

- a) Programmed Mode. (Cook with Selection of Cooking Time)
- b) Simple Mode. (Cook without Selection of Cooking Time)

**I. To Switch ON the slow cooker**

1. Press  ON/OFF Button.
2. LED Display will light up showing "On" and Cooking Temperature will default to High.



**Note:** if  COOK Button or  TIMER Button or  TEMP Button is **NOT** pressed after the unit has been Powered ON, the unit automatically shuts off after 5 minutes. *A safety Feature of West Bend Housewares.*

**II. To Switch OFF the slow cooker**

1. Press  ON/OFF Button.

**HIGHLY CONFIDENTIAL**  
**ATTORNEYS' EYES ONLY**


**West Bend Electronics Slow Cooker Project**  
**OEM's Version of Instruction Manual**

14<sup>th</sup> Jun 2004  
 Revision 6.1


## COOKING

### A. Cooking in Programmed Mode (Cook with Selection of Cooking Time)

#### I. To Switch ON the slow cooker


1. Turn ON the unit by pressing  ON/OFF Button.

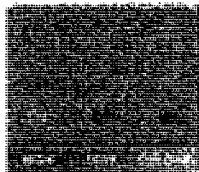
#### II. Selection of Cooking Temperature


1. Press  TEMP Button to select the desired Cooking Temperature
2. Cooking Temperature :
  - a. High
  - b. Low
  - c. Keep Warm

**Note:** If Keep Warm is selected as the Cooking Temperature, you will not be able to program Cooking Time.


#### III. Selection of Cooking Time

1. Press  TIMER Button to turn ON the function.
2. LED Display will show a flashing "4:00". The cook time "4:00" means that the unit will cook for 4 hours in the selected cooking temperature. (Cooking Time is defaulted to the recommended 4 hours)



3. With each press  TIMER Button, you will add the cooking time by one hour. LED Display will show "5:00", "6:00", "7:00" until "12:00", "0:00" and back to "4:00"

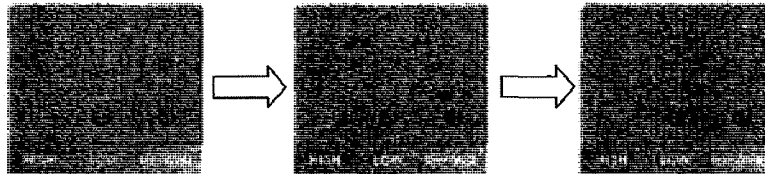
- Example: 4:00, 5:00, 6:00, 7:00, 8:00, 9:00, 10:00, 11:00, 12:00, 0:00

4. Once preferred Time is selected, press  COOK Button to start cooking.

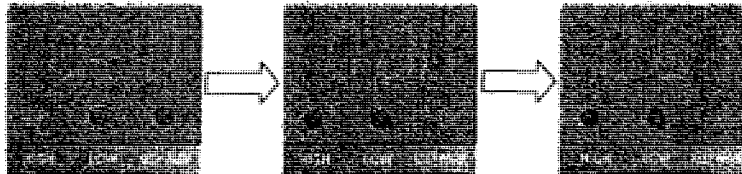
**West Bend Electronics Slow Cooker Project**  
**OEM's Version of Instruction Manual**

14<sup>th</sup> Jun 2004  
 Revision 6.1


5. The LED Display will show the selected time and start counting down. For example if the timer is set to "6:00", it will count down to "5:59" downwards.



6. At the end of the programmed time, LED Display will show "0:00". The crockery cooker will automatically shift to KEEP WARM.







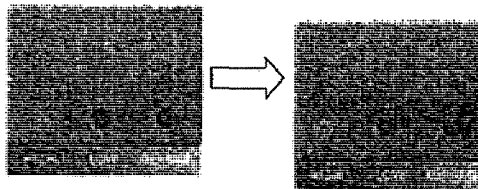
**IV. To Switch OFF the slow cooker**

1. Press  ON/OFF Button.


**Other features when Cooking with Cooking Time**

**Changing the programmed time of your cooking process:**

- Simply press  **TIMER** Button and select the desired time again and press  **COOK** Button to start the countdown of the newly set time.
- For example, if the timer is at "1:54", once press  **TIMER** Button, it will display "2:00". Every press of the  **TIMER** Button, the new cooking time will increase by 1 hour, "3:00", "4:00" until "12:00", "0:00", "01:00".




**Changing the Cooking Temperature during your cooking process:**

- Simply press  **TEMP** Button again to select your desired cooking



**HIGHLY CONFIDENTIAL**  
**ATTORNEYS' EYES ONLY**

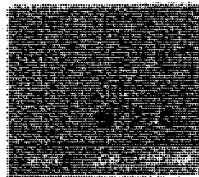
**West Bend Electronics Slow Cooker Project**  
**OEM's Version of Instruction Manual**

14<sup>th</sup> Jun 2004  
 Revision 6.1

temperature and press  **COOK** Button to start.  
 (Do note that if **KEEP WARM** is selected, the programmed cooking time will be cancelled and the unit will switch to **Simple Mode**.)


**Change to Simple Mode while in Programmed Mode:**

- To cancel programmed cooking time cooking (Programmed Mode) and switch to cook without selection of cooking time (Simple Mode).
- Simply press  **TIMER** Button and select "0:00" and press  **COOK** Button to start.





**B. Cooking in Simple Mode**  
 (Cook without Selection of Cooking Time)

**I. To Switch ON the slow cooker**

1. Turn ON the unit by pressing  **ON/OFF** Button

**II. Selection of Cooking Temperature**

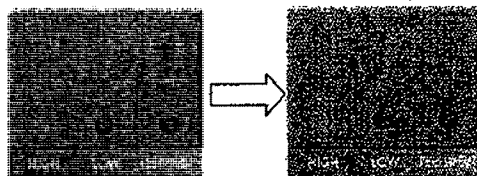
1. Press  **TEMP** Button to select the desired Cooking Temperature
2. Cooking Temperature :
  - a. High
  - b. Low
  - c. Keep Warm
3. Once preferred Cooking Temperature is selected, press  **COOK** Button to start cooking.
4. Your crockery cooker will begin cooking at the selected Cooking Temperature. The LED Display will start counting up to give you the total cooking time.

**Note:** The Maximum Cooking Time is 20 hours and the unit will auto shut off. A safety feature of West Bend Housewares.

**HIGHLY CONFIDENTIAL**  
**ATTORNEYS' EYES ONLY**

**West Bend Electronics Slow Cooker Project  
OEM's Version of Instruction Manual**

14<sup>th</sup> Jun 2004  
Revision 6.1





**III. To Switch OFF the slow cooker**

1. Press  ON/OFF Button.

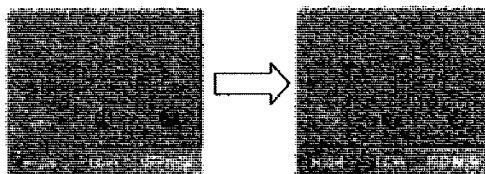
---

**C. Disable Automatic shut off feature**

- I. For your comfort, the crockery cooker will automatically shut off after a maximum cooking time of 20 hours.
- II. If you wish to disable this feature for this duration of the unit being ON, you may do so by pressing the  ON/OFF and  TIMER buttons at the same time.

**Note:** If the unit is ON more than 20 hours, the LED Display will display "--:--" after "19:59". The unit will continue to be working until you switch it OFF by pressing

-  ON/OFF Button.



**HIGHLY CONFIDENTIAL  
ATTORNEYS' EYES ONLY**

Page 1 of 1

**Wilke, Joy N.**

---

**From:** Stern, Martin L.  
**Sent:** Wednesday, September 15, 2004 8:54 AM  
**To:** Thompson, Nancy K.  
**Subject:** FW: West Bend offering, electronic slow cooker  
**Attachments:** FrontpanelXsection.jpg; BotoomPanelXsection.jpg; 3 Sept 012.jpg; 3 Sept 013.jpg

-----Original Message-----

**From:** Howard Kaney [mailto:hkaney@westbend.com]  
**Sent:** Wednesday, September 15, 2004 8:26 AM  
**To:** Stern, Martin L.  
**Cc:** Mike Carpenter  
**Subject:** West Bend offering, electronic slow cooker

Here are some cross sections and photos that I have obtained. Note that the CAD x-section is from the side of the front panel, but the photo is from the "bottom, as well as an isometric view. I did not include any photos of the bottom. Also note that the CAD drawing of the bottom shows an additional part, that I have not seen on any samples. I will be inquiring about it's function.

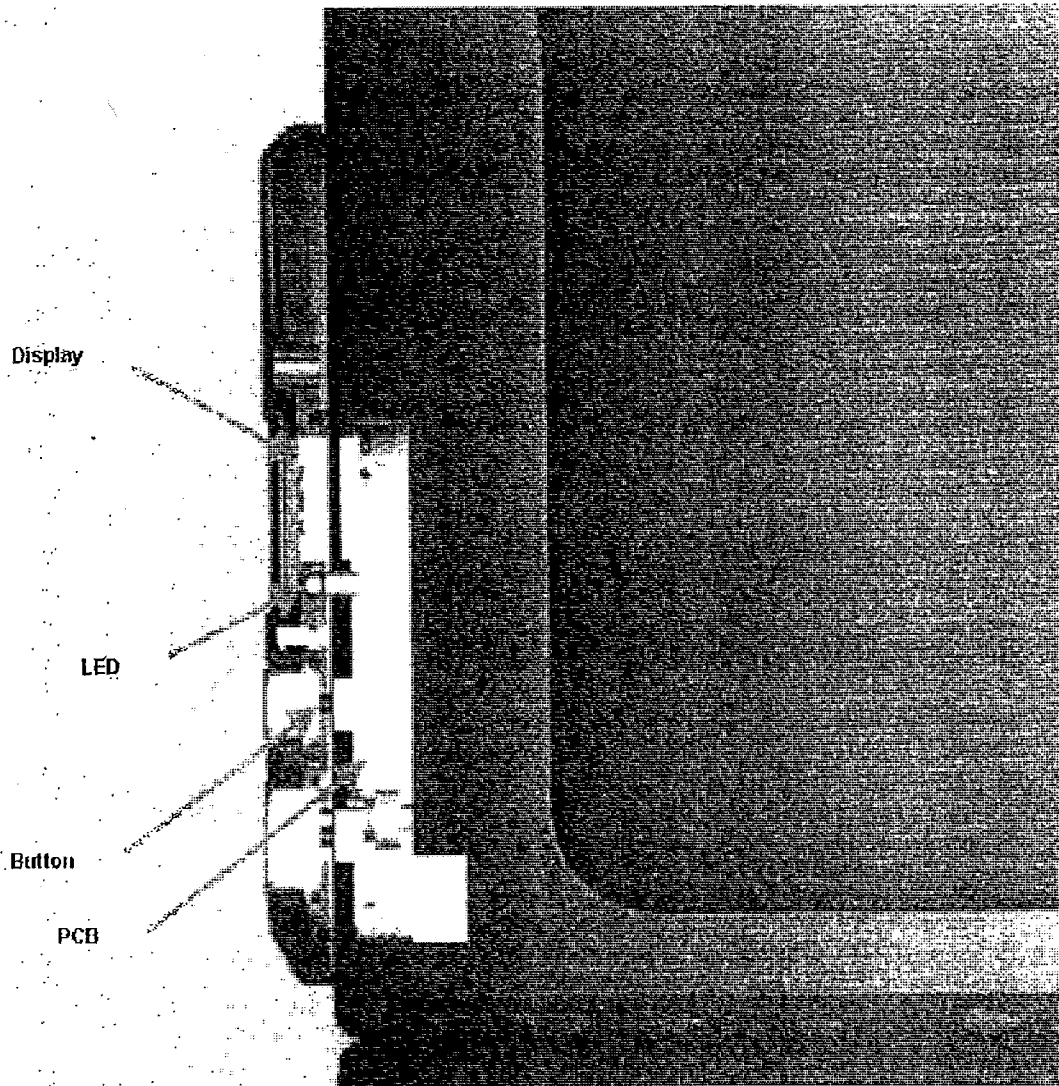
Samples of 2 competitive models that we ordered are arriving today, and will send out to you.

Howard

HIGHLY CONFIDENTIAL  
ATTORNEYS' EYES ONLY

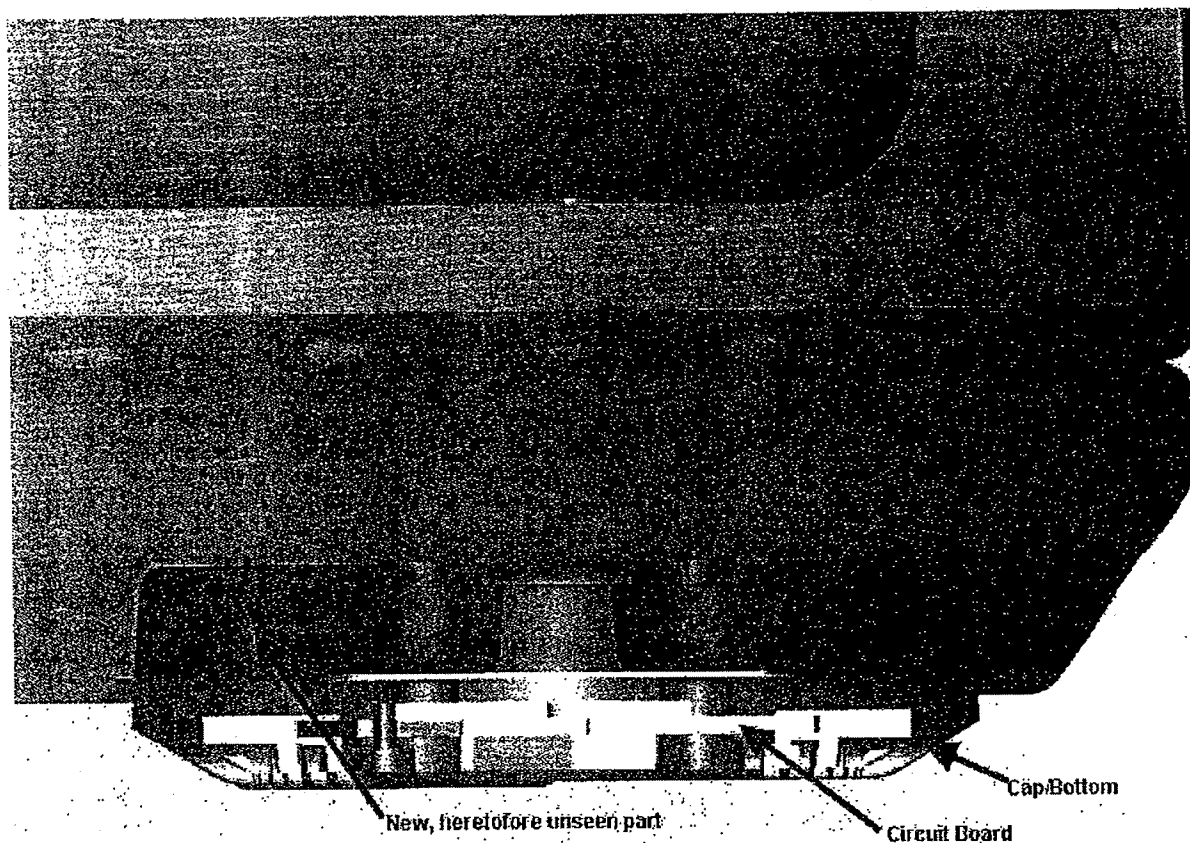
8/7/2006

WB 003145



HIGHLY CONFIDENTIAL  
ATTORNEYS' EYES ONLY

WB 003146



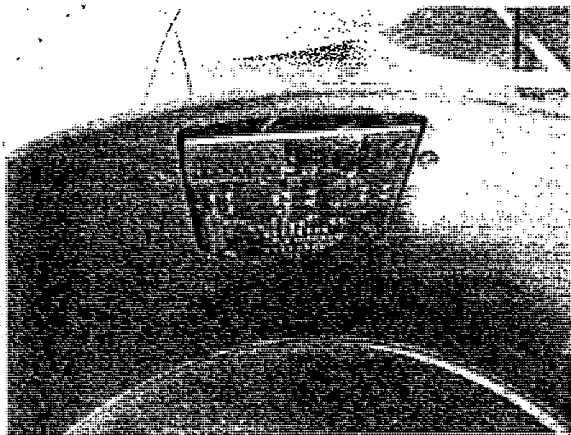
**HIGHLY CONFIDENTIAL  
ATTORNEYS' EYES ONLY**

**WB 003147**



HIGHLY CONFIDENTIAL  
ATTORNEYS' EYES ONLY

WB 003148



**HIGHLY CONFIDENTIAL  
ATTORNEYS' EYES ONLY**

**WB 003149**

# EXHIBIT C

## PART 1



www.mbf-law.com

401 N. Michigan Avenue  
Suite 1900  
Chicago, Illinois 60611  
Telephone (312) 222-0880  
FAX (312) 222-0818  
Author: Martin L. Stern  
Writer's Direct Line: (312) 661-2121  
Email: [mlstern@mbf-law.com](mailto:mlstern@mbf-law.com)

Offices in:  
Milwaukee, Wisconsin  
Madison, Wisconsin  
Marion, Wisconsin  
Waukesha, Wisconsin  
Lehigh Valley, Pennsylvania

February 22, 2005

CONFIDENTIAL/ATTORNEY-CLIENT PRIVILEGE

The following opinion reflects the disclosure of confidential information from West Bend Housewares LLC and Focus Products Group LLC to our law firm. Accordingly, this opinion contains attorney work product as well as privileged attorney-client communications and, as such, should not be copied, reproduced, or otherwise distributed except to persons at West Bend Housewares and Focus Products responsible for decisions related to the subject matter contained herein.

VIA FEDERAL EXPRESS

Mr. Keith W. Jaffe  
Focus Products Group LLC  
120 Lakeview Parkway  
Vernon Hills, IL 60061

Re: Study of Holmes U.S. Patent Nos. 6,573,483 and 6,740,855  
File No. 095511-9072

Dear Keith:

You asked us to provide you with our opinion as to whether West Bend's proposed slow cooker infringes U.S. Patent Nos. 6,573,483 (the '483 patent) or 6,740,855 (the '855 patent).

As explained in the accompanying report, we believe that West Bend's slow cooker does not infringe any claim of either patent, either literally or under the doctrine of equivalents. We believe that the '483 and '855 patent claims, properly interpreted, must be limited to a slow cooker or a method of using a slow cooker where the housing for the programmable controller or control circuit is mounted to the outside of the heating unit. According to the Holmes '483 and '855 patents, Holmes solved the problem of controller overheating encountered when a slow cooker is made more compact by locating the controller in a housing that is mounted to the outside of the heating unit. In contrast, West Bend's programmable controller is mounted inside the heating unit within the heating cavity. This departs from the teachings of the Holmes patents

WB 002352

Highly Confidential  
Attorneys' Eyes Only

**MICHAEL BEST  
& FRIEDRICH LLP**  
*Attorneys at Law*

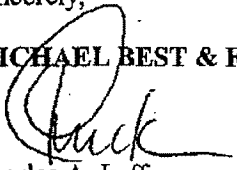
Mr. Keith W. Jaffe  
February 22, 2005  
Page 2

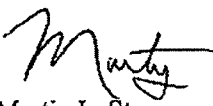
to solve the controller overheating problem and provides a novel device, which we believe is patentable.

We look forward to your comments.

Sincerely,

**MICHAEL BEST & FRIEDRICH LLP**

  
Charles A. Laff

  
Martin L. Stern

MLS:rbs:nkt  
enclosure

cc: Mike Carpenter (by FedEx, w/encl.)  
Howard Kaney (by FedEx, w/encl.)  
Derek Stettner (w/encl.)  
Lisa Childs

S:\client\095511\9072\C0446226.1

WB 002353

**Highly Confidential  
Attorneys' Eyes Only**

**REPORT FOR  
WEST BEND HOUSEWARES  
ON THE SCOPE OF HOLMES  
U.S. PATENT NOS. 6,573,483 AND 6,740,855**

**CONFIDENTIAL/ATTORNEY-CLIENT PRIVILEGE**

The following opinion reflects the disclosure of confidential information from West Bend Housewares LLC and Focus Products Group LLC to our law firm. Accordingly, this opinion contains attorney work product as well as privileged attorney-client communications and, as such, should not be copied, reproduced, or otherwise distributed except to persons at West Bend Housewares and Focus Products responsible for decisions related to the subject matter contained herein.

Charles A. Laff  
Martin L. Stern  
MICHAEL BEST & FRIEDRICH LLP  
401 N. Michigan Ave. - Suite 1900  
Chicago, IL 60611  
Phone: 312-661-2100

February 22, 2005

WB 002354

**Highly Confidential  
Attorneys' Eyes Only**

## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	1
DETAILED DISCUSSION .....	3
I. West Bend's Programmable Slow Cooker .....	3
II. U.S. Patent No. 6,573,483.....	4
A. The '483 Patent Specification.....	5
B. The '483 Patent Claims.....	7
1. Claim 1 And Its Dependent Claims 2-10.....	7
2. Claim 11 And Its Dependent Claim 12.....	8
3. Claim 13 And Its Dependent Claims 14-19.....	8
C. The '483 Patent Prosecution History.....	9
1. The First Office Action And Response.....	9
2. The Second Office Action And Response .....	9
D. Construing The '483 Patent Claims.....	11
III. U.S. Patent No. 6,740,855.....	12
A. The '855 Patent Specification.....	12
B. The '855 Patent Claims.....	13
1. Claim 1 And Its Dependent Claims 2-11.....	13
2. Claim 12 And Its Dependent Claim 13-19 .....	14
3. Claim 20 And Its Dependent Claims 21-30.....	14
4. Claim 31 And Its Dependent Claims 32-36.....	15
5. Claim 37 And Its Dependent Claims 38-42.....	15
C. The '855 Patent Prosecution History.....	16
1. First Preliminary Amendment.....	16
2. Second Preliminary Amendment .....	17
3. July 2003 Office Action Response .....	17
D. Construing The '855 Patent Claims.....	18
IV. West Bend's Slow Cooker Does Not Infringe Either Patent .....	19
A. The '483 Patent Is Not Infringed .....	20
1. Claims 1-10.....	20
2. Claims 11-12.....	22
3. Claims 13-19.....	22
B. The '855 Patent Is Not Infringed .....	23

WB 002355

### EXECUTIVE SUMMARY

We studied U.S. Patent Nos. 6,573,483 (the '483 patent) and 6,740,855 (the '855 patent) to determine whether they would be infringed by your proposed West Bend slow cooker. We believe the West Bend slow cooker departs from the teachings and claims of the '483 and '855 patent by locating the programmable control circuit, as well as the printed circuit board for the control panel, inside the heating unit. In contrast to this, the '483 and '855 patents both teach and claim that in order to prevent the cooker's programmable controller from overheating, the controller should be placed in a housing mounted on the exterior of the heating unit. This structure, however, creates a less desirable appearance, sometimes referred to in the trade as a "pig's snout." To achieve a more sleek, compact, and aesthetically desirable unit, West Bend has figured out how to place the control circuitry inside the heating unit without overheating. We believe this new West Bend slow cooker is patentable. It achieves a unique solution to the problem of making a compact slow cooker with a programmable controller that will not overheat. This solution departs from the prior art teachings, including those of the '483 and '855 patents. Indeed, the '483 and '855 patents specifically teach that placing the programmable control circuit near the heating unit as in the West Bend cooker is undesirable.

We believe the West Bend slow cooker does not infringe any of the 19 claims of the '483 patent for at least the following reasons:

- Claims 1-10 each require a programmable controller mounted to a housing that in turn is mounted to an outside of the heating unit. The programmable controller for the West Bend slow cooker is mounted inside the heating unit. The printed circuit board that receives user input from the front control panel (which we believe is not a programmable controller as called for by the claims) is also mounted inside the heating unit.
- Claims 11-12 call for a controller housing that has a bottom wall with at least one lower opening and a top wall with at least one upper opening. Neither West Bend's controller housing mounted to the bottom of the heating unit, nor the control panel mounted to the front of the heating unit, satisfies the controller housing limitations of claims 11-12. The West Bend housing on the bottom of the heating unit has openings only in a bottom wall and the front control panel (which we do not believe is a housing within the meaning of the patent claims) has no openings at all.
- Claim 13 and dependent claims 14-19 relate to a method of using a programmable slow cooker by selecting a cooking time and temperature with a programmable controller and automatically lowering the temperature after the selected time. In light of the '483 patent's prosecution history, we believe claims 13-19 should be limited to a method of using a programmable slow cooker where the programmable controller is mounted to a housing that is mounted to the outside of the heating unit. As mentioned regarding claims 1-10, West Bend's slow cooker does not meet this limitation. Moreover, we believe claims 13-19 are invalid in light of the prior art.

With respect to the '855 patent, we believe there is no infringement of any of the claims for the following reasons:

WB 002356

Highly Confidential  
Attorneys' Eyes Only

- Claims 1-11 each require a housing for the programmable circuit that is mounted to and projects outside a continuous sidewall of the heating unit. The housing has upper and lower vents to convect heat away from the circuit and is provided with a control panel. Neither West Bend's controller housing mounted inside the bottom of the heating unit nor the control panel mounted to the front of the unit meets the requirements of claims 1-11.
- Claims 12-19 also call for a housing for the programmable circuit that is mounted to and projects outside a continuous sidewall of the heating unit, the housing having vents and a control panel. As with claims 1-11, West Bend's slow cooker lacks a vented controller housing with a control panel mounted to the outside of a sidewall.
- Claims 20-30, like the preceding '855 patent claims, call for a housing for the programmable circuit that has a control panel and is mounted to and projects outside a sidewall of the heating unit. Neither West Bend's controller housing mounted inside the bottom of the heating unit nor the control panel mounted to the front of the heating unit meets the requirements of claims 20-30.
- Claims 31-36 also call for a housing for the programmable circuit mounted to and projecting outwardly from a sidewall of the heating unit, the housing having a vent opening and an inclined front surface with a control panel. For the reasons stated above with respect to claims 1-30, West Bend's slow cooker would not be covered by claims 31-36. In addition, the West Bend slow cooker does not have an inclined front surface for a control panel.
- Claims 37-42 are similar in scope to claims 31-36 in that they each require a housing for the programmable circuit that is mounted to and projects outside a sidewall, the housing having an inclined front surface for a control panel. Thus, for the same reasons West Bend's slow cooker does not meet the requirements of claims 31-36, it also does not meet the requirements of claims 37-42.

This opinion is based on a study of the '483 and '855 patents, their prosecution histories, the prior art cited by the Patent & Trademark Office (PTO) and uncovered in our prior art searches, and the prototype of your slow cooker provided to us.

As you know, Holmes still has a continuing patent application pending (Ser. No. 10/323,234) for its programmable slow cooker based on the '483 patent. No information about the status of this continuing '234 application is publicly available, so we are not able to advise as to the possible scope of additional patent protection beyond the '483 and '855 patents that Holmes is trying to obtain. Thus, unanswered questions remain as to additional patent protection that Holmes may be seeking for its programmable slow cooker. We are monitoring the status of the '234 application on a weekly basis.

The question of patent infringement involves a consideration of facts and law, and reasonable minds may differ as to the scope and meaning of patent claims and whether or not patent claims cover a given product in light of the relevant facts. Also, subsequent changes in the law or newly-discovered facts may affect this opinion. Accordingly, no opinion as to non-infringement,

WB 002357

including this one, can ever be taken as a guarantee that a court or jury presented with these issues would reach the same result. We caution that any changes to your slow cookers should be reevaluated because such changes may affect our analysis and conclusions.

## DETAILED DISCUSSION

### I. WEST BEND'S PROGRAMMABLE SLOW COOKER

As shown in the attached photographs and described in the attached West Bend Instruction Manual, the West Bend programmable slow cooker comprises a circular heating unit 12 that removably holds a ceramic cooking vessel 14 (provided with a lid 16) in which the food is cooked. The slow cooker is programmed by a user through a control panel 30 mounted on the front of the heating unit 12.

In more detail, the heating unit 12 is formed by exterior and interior sidewalls 20, 22 that are spaced apart to define a heating cavity 24. The inner sidewall 22 has an annular flange around its upper circumference to support the inner sidewall on the outer sidewall. The heating cavity 24 is closed at the top by the upper flange of the inner sidewall. A base 18 supports the outer sidewall 20 and closes the bottom of the heating cavity 24. A heating element 26 is secured around the circumference of the inner sidewall 22 in the heating cavity 24.

The inner sidewall 22 of the heating unit 12 is joined to an inner bottom 23 to form a well 15 to receive the cooking vessel 14. A flange around the top of the cooking vessel 14 is supported on the annular top edges of the inner and outer sidewalls 20, 22 when the vessel 14 is placed in the well 15.

As explained in more detail below, a user can program the cooker by selecting cooking times and temperatures by means of the control panel 30, which is mounted on outer sidewall 20 over an aperture 31. The control panel 30 includes several push buttons for: "On/Off," temperature selection (HI/LO), cooking initiation, and time selection. An LED 29 displays the cooking time selected and counts down the time left in the cooking cycle as cooking progresses. No vents or other openings are provided in control panel 30.

The cooking parameters selected by pushing the buttons on the control panel 30 are transmitted to a printed circuit board 32 that is secured to the inside of the heating unit 12 (in heating cavity 24) immediately behind the control panel 30 and aperture 31. The circuit board 32 is attached to the inside of a plastic cap 34, which in turn is secured to the inside of the outer sidewall 20 so as to position the circuit board 32 behind control panel 30 and aperture 31. The circuit board 32 is thus located entirely inside heating unit 12 in heating cavity 24. Only the LED 29 and touch sensors 33 extend outside the outer sidewall 20 so that the control panel push buttons contact and operate the touch sensors 33 to transmit the cooking parameters (i.e., time, temperature) selected by a user to the circuit board. In response to the time and temperature selected, the circuit board 32 generate signals that are transmitted to and read by a programmable controller 35, described hereinafter. Thus, the circuit board 32 is not programmable, but merely takes the cooking time and temperature selected by a user and generates electrical signals in response thereto for transmission to the programmable controller 35. An insulation pad is placed in the heating

WB 002358

cavity 24 behind circuit board 32 so that the insulation is interposed between the circuit board and the heating element 26.

The programmable controller 35 is attached to the inside of plastic cap 36 which is secured to the inside of base 18. No vents or openings are provided in cap 36. The programmable controller is located entirely within the cap 36 and, therefore, within the heating cavity 24 of the heating unit 12 (i.e., between base 18 and bottom 23 of well 15). An aperture is formed in base 18 under the programmable controller 35 and a metal cap 37 is welded to the outside of base 18 to cover the aperture. The metal cap 37 is provided with a number of openings to allow air to enter and leave the enclosure that houses the programmable controller.

The programmable controller 35 contains circuitry, such as a microprocessor, to allow a user to program desired cooking temperatures and times. A triac is wired between the programmable controller 35 and the heating element 26 to switch power for the heating element on and off in response to the control signals generated by the programmable controller.

To operate the slow cooker, a user first pushes the "On/Off" button to turn power on. A temperature setting is then selected from "HI," "LO" or "Warm." If a "HI" or "LO" setting is selected for cooking, the desired time is then selected by using the "Time" button to scroll up to a desired cooking time. Pressing the "Cook" button will start the cooking cycle. When the cooking cycle is completed, the cooker will automatically shift to the "Warm" mode and the timer will show the time elapsed in the "Warm" mode. The "On/Off" button can be used at any time to turn the cooker off.

## II. U.S. PATENT NO. 6,573,483

The '483 patent, entitled "Programmable Slow-Cooker Appliance," issued on June 3, 2003, with 19 claims. Of these, claims 1, 11 and 13 are independent. The '483 patent relates in general to a slow-cooker appliance that is programmable.

The utility application from which the '483 patent issued was filed on March 8, 2001. The '483 patent claims priority from two provisional applications filed on March 15 and April 5, 2000.<sup>1</sup> If all maintenance fees are paid, the patent will expire twenty years from the date the utility application was filed, namely, March 8, 2021.

<sup>1</sup> The critical date for invalidating prior art that might affect the interpretation or scope of the '483 patent claims is March 15, 1999. Any reference such as, for example, a sale, public use, patent, publication or advertisement dated more than one year before the '483 patent's earliest filing date of March 15, 2000 is prior art with respect to the '483 patent. 35 U.S.C. § 102(b) (requiring that the invention not have been "patented or described in a printed publication in this or a foreign country or in public use or on sale in this country more than one year prior to the date of application for patent in the United States"). Thus, the March 15, 1999 date is referred to as the "critical" date. In addition, under certain circumstances, prior art dating before the March 8, 2000 filing date of the '483 patent application, but after March 15, 1999, may also constitute prior art.

WB 002359

As explained below, it is our opinion that mounting the programmable controller to a housing that is mounted to the outside of the heating unit is an important feature of the '483 patent, which limits the claims of the patent.

#### A. THE '483 PATENT SPECIFICATION

The '483 patent relates to a programmable slow cooker in which the user sets a time and temperature for cooking a food item and a programmable controller automatically lowers the temperature after the selected time. According to the '483 patent, some slow-cooker appliances that provide all-day cooking only permit one cooking temperature to be set, potentially subjecting the cooked food to over- or under-cooking. While "[a]nother option may be to use a cooking unit with a controller, where a user may set a time or temperature desired," such units "tend to be quite a bit larger and more expensive than slow-cooker appliances." The patent explains that if such programmable units are made smaller, they "suffer because the controller inevitably must be placed near the heating unit." Thus, "[w]hat is needed is a slow cooker unit in which the controller does not become overheated and damaged by the heating element." (Col. 1, lines 9-28).

To accomplish this objective, a programmable controller is mounted to a housing that is mounted to the outside of the heating unit. The control housing includes ventilation holes in its bottom and top walls to create a chimney effect in which cool air from the surroundings is drawn into the ventilation openings at the bottom of the housing to cool the controller and then is exhausted from the ventilation holes at the top of the housing.

As described in more detail in the '483 patent, the control (200) includes a circuit board housing (210), a control panel (220) and an insulation shield (222) that are assembled together for attachment to the outer sidewall (18) of the heating unit (12). A printed circuit board (254) is mounted inside housing (210). (Col. 3, lines 12-18; Fig. 7). As shown in Figures 5 and 6, the housing (210) includes a control panel interface (224) located on an inclined front surface of the housing (210). Air circulation is promoted through the housing (210) through a plurality of openings (250) in the bottom wall (230) and an elongated upper slot (252) on the front face (224) of the housing (210). (Col. 4, lines 11-20).

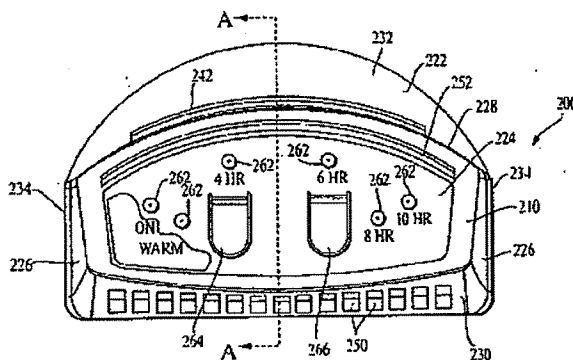


FIG. 5

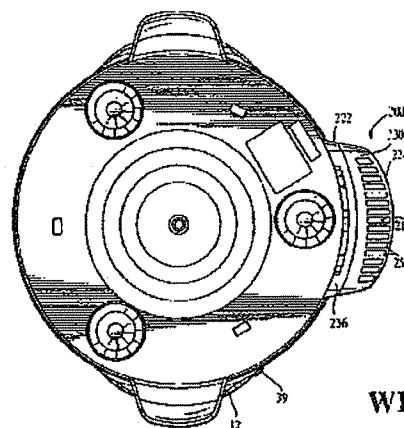


FIG. 6

WB 002360

Highly Confidential  
Attorneys' Eyes Only

"The circuit board (254) mounts circuitry and logic allowing the user of the appliance (10) to electronically control and program cooking cycles and temperature." (Col. 4, lines 48-51). The control panel (224) allows a user to input the desired cooking parameters to program the circuit board (254).

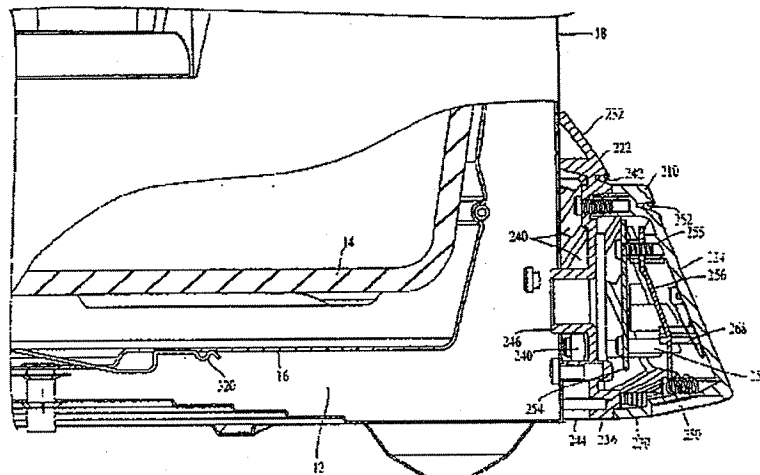


FIG. 7

As explained below, the focus of the '483 patent centers on the fact that the housing for the programmable controller is mounted to the outside of the heating unit. During prosecution of the '483 patent application, this particular feature was primarily relied upon to distinguish the claimed invention from the cited prior art and obtain allowance of the '483 patent. Indeed, the '483 patent describes only one way for mounting the controller to the appliance (*i.e.*, to the outside of the heating unit) to accomplish the central purpose of the claimed invention, namely, providing a programmable slow cooker where the programmable controller does not become overheated.

The specification only describes a single embodiment of a slow-cooker with a programmable controller mounted to the outside of the heating unit and does not identify any alternate locations for the controller:

- "The appliance includes a programmable controller mounted on its outside, and preferably mounted via a controller housing...." Col. 1, lines 38-40 (Summary of the Invention).
- "The control 200 preferably includes a circuit board housing 210, a control panel 220, and an insulation shield 222 assembled together for attachment to the outer sidewall 18 of the heating unit 12." Col. 3, lines 12-15.
- "This ... locates the controls and componentry within the housing 210 away from a significant amount of the heat generated by the appliance 10." Col. 3, lines 27-31.

WB 002361

- "To further protect the electric componentry within the housing 210 from the heat generated by the appliance 10, the annular shield member 222 is preferably sized for interposition between the heating unit 12 and the housing 210." Col. 3, lines 53-56.

Because the specification (and the prosecution history as explained below) describes a primary object of the invention as including a programmable controller that does not become overheated, and repeatedly discloses only a single way of preventing overheating, namely, mounting the programmable controller to the outside of the heating unit, we believe the claims should be limited to outside-mounted controllers.<sup>2</sup>

#### B. THE '483 PATENT CLAIMS

The '483 patent claims can be divided into three groups for purposes of analysis.<sup>3</sup>

##### 1. CLAIM 1 AND ITS DEPENDENT CLAIMS 2-10

Claim 1 and its dependent claims 2-10 call for a programmable slow-cooker with a heating unit, a cooking unit that fits within the heating unit, a controller housing mounted on the outside of the heating unit, and a programmable controller mounted to the housing. The controller housing convects heat away from the controller.

Claim 1 reads as follows:

1. A programmable slow-cooker appliance, comprising:

a heating unit;

a cooking unit adapted to fit at least partially within the heating unit;

<sup>2</sup> *SciMed Life Sys., Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1341 (Fed. Cir. 2001). See also *Watts v. XL Sys., Inc.*, 232 F.3d 877, 882 (Fed. Cir. 2000); *Laitram Corp. v. Morehouse Indus., Inc.*, 143 F.3d 1456, 1463 (Fed. Cir. 1998); *O.I. Corp. v. Tekmar Co.*, 115 F.3d 1576, 1581 (Fed. Cir. 1997). Indeed, "the written description of the preferred embodiments 'can provide guidance as to the meaning of the claims, thereby dictating the manner in which the claims are to be construed, even if the guidance is not provided in explicit definitional format'." *Bell Atlantic Network Serv., Inc. v. Covad Comm. Group, Inc.*, 262 F.3d 1258 at 1268 (quoting *SciMed*, 242 F.3d at 1344).

<sup>3</sup> We need only analyze the independent claims of the Holmes '483 and '855 patents for this report. An independent claim is one that contains a complete description of the subject matter sought to be protected, without reference to any other claim. A dependent claim is one that refers back to and further restricts (i.e., makes more narrow) a preceding claim, which may itself be a dependent claim. A dependent claim thus incorporates all of the elements of the claim it depends on. Therefore, if an independent claim is not infringed (i.e., the accused product or process lacks an element found in the independent claim), then the dependent claim is likewise not infringed. *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1553 (Fed. Cir. 1989).

WB 002362

a controller housing fixedly mounted to an outside of the heating unit; and

a programmable controller mounted to the housing to control the heating unit, wherein said housing is configured to convect<sup>4</sup> heat away from the controller.

**2. CLAIM 11 AND ITS DEPENDENT CLAIM 12**

Claim 11 and its dependent claim 12 are directed to the control housing itself. (Claim 11 was not amended during prosecution of the '483 patent application.) Claim 11 reads as follows:

11. A control housing for a slow cooker heating unit, said housing comprising:

a front wall;

a bottom wall defining at least one lower opening, the bottom wall attached to the front wall;

a top wall defining at least one upper opening, the top wall attached to the front wall; and

a circuit board mounted behind the front wall, the circuit board apart from a wall of the heating unit.

**3. CLAIM 13 AND ITS DEPENDENT CLAIMS 14-19**

Claim 13 and its dependent claims 14-19 recite a method of using a programmable slow-cooker comprising, among other steps, "selecting a cooking temperature and time using a programmable controller mounted to a housing fixedly mounted to a heating unit." In contrast to claims 1-10, these claims do not explicitly require the controller housing to be on the outside of the heating unit.

Claim 13 reads as follows:

13. A method of using a programmable slow-cooker appliance, the method comprising:

providing a food item;

placing the food item into a cooking unit of the slow-cooker appliance;

selecting a cooking temperature and time using a programmable controller mounted to a housing fixedly mounted to a heating unit; and

---

<sup>4</sup> The American Heritage Dictionary defines *convect* as "to transfer (heat) by convection." The relevant definition of *convection* is "heat transfer in a gas or liquid by the circulation of currents from one region to another." Am. Heritage Dict. (4<sup>th</sup> Ed. 2000).

WB 002363

changing the heating unit temperature automatically to a lower temperature after the selected time.

### C. THE '483 PATENT PROSECUTION HISTORY

As set forth below, we believe the prosecution history of the '483 patent also compels the conclusion that a programmable controller mounted to a housing that is mounted to the outside of the heating unit is key to the patentability of the claims because the applicant repeatedly described its invention in this way.<sup>5</sup> For instance, in response to the second office action, the applicant defined the invention as including a controller housing mounted to the outside of the heating unit:

*the claimed invention of claims 1, 11, and 13 ... is a programmable slow-cooker appliance comprising a heating unit, a cooking unit, a controller housing mounted outside the heating unit, and a programmable controller mounted to the housing, where heat is convected away from the housing.*

(emphasis added).

#### 1. THE FIRST OFFICE ACTION AND RESPONSE

The first office action (dated December 5, 2001) was brief, and simply identified claims 1-7, 9, and 11-13 as "being clearly anticipated by Rivelli et al." and claims 8, 10 and 14-19 as obvious in view of Rivelli and Yung. Copies of the first office action and the cited prior art are attached.

In response, on February 12, 2002, the applicant argued that Rivelli used insulation around the controller, while claim 1 of the present patent called for "the housing to convect heat away from the controller" and claim 11 "claims these top and bottom openings specifically" that are not found in Rivelli. It further characterized claim 13 as a method of using the slow-cooker appliance of claim 11, thus indicating that claim 13 should be limited in scope to methods using slow cookers having a control housing as recited in claim 11, along with the additional limitations of claim 13. None of the pending claims were amended in response to the first office action. (A copy of the response to the first office action is attached.)

#### 2. THE SECOND OFFICE ACTION AND RESPONSE

In the second office action (dated May 21, 2002), the examiner again rejected the claims, this time as obvious in view of Rivelli in combination with various other patents.

<sup>5</sup> The prosecution history must be consulted "to determine whether the patentee has relinquished a potential claim construction in an amendment to the claim or in an argument to overcome or distinguish a reference." *Bell Atlantic*, 262 F.3d at 1268. Examination of the prosecution history is especially important where, as here, "the invention involves a crowded art field, or when there is particular prior art that the applicant is trying to distinguish." *Engel Indus., Inc. v. Lockformer Co.*, 96 F.3d 1398, 1405 (Fed. Cir. 1996).

WB 002364

In its August 21, 2002 response, the applicant amended claims 1 and 13 by restricting the controller housing to one in which the housing was "fixedly" mounted to the heating unit. Applicant again distinguished Rivelli as using "dead air space and thick insulation" to "prevent conduction of heat to the controller; Rivelli does not use convection to carry heat away from the controller."

The applicant repeatedly explained in response to the prior art rejection that the amendments to the claims were "to better describe the fixed mounting of the housing to the exterior of the heating unit":

- "[T]he combination [of cited references] does not yield the *claimed invention* of claims 1, 11 and 13, which is a programmable slow-cooker appliance comprising a heating unit, a cooking unit, *a controller housing mounted outside the heating unit, and a programmable controller mounted to the housing*, where heat is convected away from the housing.
- "The combination ... does not describe or suggest a device having a controller housing mounted *outside the heating unit* nor having other claimed features, such as those that would allow convection to occur."
- "The combination does not yield a cooking implement having a *controller fixedly mounted to an outside of the housing*, since the control module of Rivelli is contained within the single housing, while the controller of Skutt is only hingedly mounted to the exterior of the housing."
- "Applicants have amended the claims to better describe the fixed mounting of the housing to the *exterior* of the heating unit."
- "As mentioned above, neither Rivelli nor Frey describe a housing for a programmable *controller fixedly mounted to the outside of the heating unit*."
- "Yung also fails to describe a housing for a controller mounted *outside* the heating unit. In Yung, a programmable controller is mounted inside the housing, *not outside*."
- "Therefore, even an improper combination does not describe or suggest the claimed invention [referring to claims 8, 10, and 14-19], including *a controller housing mounted fixedly to the outside of the heating unit*."

(emphases added).

On September 20, 2002, the examiner issued a notice of allowability as to all claims, with no statement of reasons for allowance. On April 16, 2003, the examiner issued a supplemental notice of allowability in view of drawing corrections submitted by the applicant.

Thus, we believe that, like the specification, the prosecution history compels the conclusion that the claims are limited to a slow cooker or a method of using a slow cooker where the

WB 002365

programmable controller is mounted to a controller housing which is mounted to the outside of the heating unit.<sup>6</sup>

#### D. CONSTRUING THE '483 PATENT CLAIMS

To determine whether a patent is infringed (or invalid), the meaning and scope of each claim must first be determined.<sup>7</sup> For purposes of the '483 patent, the claims may be construed by resort to the plain meaning and ordinary understanding of their terms, given their apparent lack of technical and linguistic complexity, as well as the lack of ambiguity in the patent itself and its prosecution history.<sup>8</sup>

The prosecution history of the '483 patent reveals that the applicant repeatedly argued, in order to distinguish the claimed invention over the prior art and obtain allowance of the claims, that the controller housing was *fixedly* mounted to the *outside* of the heating unit. In addition, the patent specification itself reveals no alternate location for the controller housing and describes the invention as including a programmable controller mounted on the outside of the heating unit, preferably via a controller housing. The programmable controller comprises a circuit board which includes circuitry and logic to allow the user to electronically control and program cooking cycles and temperature.

Thus, in our opinion, the prosecution history, specification, and claims of the '483 patent compel the conclusion that the '483 claims must be limited to a slow-cooker or a method of using a slow cooker where the controller is mounted to a controller housing which is *fixedly* mounted to the outside of the heating unit. That claim 13 does not explicitly recite the controller housing as *fixedly* mounted to *an outside of* a heating unit is not controlling in light of the prosecution history. The applicant repeatedly argued during prosecution of the '483 patent application in order to obtain allowance of the '483 patent that the invention of claim 13 (like claims 1 and 11) is different from and patentable over the cited prior art because the housing for the programmable controller is mounted to the outside of the heating unit. The '483 applicant pointed out that, in contrast to the claimed invention of the '483 patent, the controllers in the cited prior art were mounted inside the heating unit. Thus, we believe the '483 patent applicant

<sup>6</sup> *Watts v. XL Sys., Inc.*, 232 F.3d 877, 883 (Fed. Cir. 2000) (patent prosecution history limited scope of claimed invention, confirming the limiting nature of the written specification); *Wang Labs., Inc. v. America Online, Inc.*, 197 F.3d 1377, 1384 (Fed. Cir. 1999) (same).

<sup>7</sup> *Amazon.com, Inc. v. BarnesandNoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001) ("A claim must be construed before determining its validity just as it is first construed before deciding infringement.").

<sup>8</sup> *Interactive Gift Express, Inc. v. Compuserve, Inc.*, 231 F.3d 859 (Fed. Cir. 2000) ("If the claim language is clear on its face, then our consideration of the rest of the intrinsic evidence is restricted to determining if a deviation from the clear language of the claims is specified.").

WB 002366

disclaimed patent coverage in claim 13 that would encompass use of a slow cooker like West Bend's where the programmable controller is mounted inside the heating unit.<sup>9</sup>

### III. U.S. PATENT NO. 6,740,855

The '855 patent, entitled "Programmable Slow-Cooker Appliance," issued on May 25, 2004, with 42 claims. Of these, claims 1, 12, 20, 31, and 37 are independent. Like the '483 patent, the '855 patent relates in general to a slow-cooker appliance that is programmable.

The '855 patent is a continuation of the '483 patent and, like the '483 patent, will expire on March 8, 2021 if all maintenance fees are timely paid. Its critical date for purposes of prior art is also March 15, 1999.

#### A. THE '855 PATENT SPECIFICATION

The specification is essentially the same as the '483 specification and thus describes only slow-cookers with outside-mounted controllers and does not identify any alternate locations for the controller.

In addition, the specification describes how the heat is convected away from the programmable circuit, and the only embodiment is one using a controller housing having upper and lower vents:

The appliance includes a programmable controller mounted thereto via a controller housing, which acts to insulate the controller from the heat of the appliance, preferably via a unique system of ventilation. The housing utilizes ventilation holes on its bottom and top to encourage a chimney effect, in which air from the surroundings is drawn through the housing. This air cools the controller, and the air is then exits [sic] from ventilation holes near the top of the housing, convecting heat away from the controller.

Col. 1, lines 44-53.

In a similar fashion, air circulation is promoted through the housing 210 through a set of openings, preferably defined between the upper portion and, the bottom of the housing 210. In particular, a plurality of openings 250 are defined within the bottom wall 230 of the housing 210. An elongated upper slot 252 is provided on the front face 224 of the housing 210. This allows air to freely circulate behind the control panel 224 and assist in the dissipation of heat from the circuit board 254 and its electronic componentry within the housing 210. Preferably, a heat sink 256 is provided as shown in FIG. 7 and positioned between the circuit board 254 and the front panel 224 inside the housing 210. The sink 256 preferably includes a plurality of openings defined therein to allow air to circulate between the openings 250 and 252 and through and around the heat sink 256 to dissipate additional heat therefrom. Also shown is the relative position of cooking unit 14.

<sup>9</sup> *Watts v. XL Sys. Inc.*, 232 F.3d 877, 883-84 (Fed. Cir. 2000) (prosecution history must be consulted to determine scope of claim). See *infra* n. 22.

WB 002367

Col. 4, lines 15-31.

## **B. THE '855 PATENT CLAIMS**

The '855 claims can be divided into two groups for purposes of analysis.

Claims 1-19 (including independent claims 1 and 12 and their dependent claims) are directed generally to a slow cooker with a housing for a programmable circuit to electronically control and program cooking cycles and temperature. The controller housing is fixedly mounted to the outside of the cooker's heating unit, where the housing has vents for cooling the circuit.

Claims 20-42 (including independent claims 20, 31, and 37 and their dependent claims) cover a slow cooker with a programmable circuit that switches the heating unit from a cook mode to a warm mode. These claims do not call for vents in the housing, and independent claims 31 and 37 do not use the term "fixedly" with reference to the housing mounted on the outside of the heating unit.

To facilitate the explanation of the '855 prosecution history, the following table identifies the application claim numbers used during the prosecution of the '855 patent application and the numbers of the corresponding issued claims.

Original Claim	Claim as Issued
34	1
45	12
53	20
64	31
70	37

### **1. CLAIM 1 AND ITS DEPENDENT CLAIMS 2-11**

#### **1. A programmable slow-cooker appliance comprising:**

a heating unit including a bottom and a continuous sidewall extending from said bottom, said bottom and said continuous sidewall including an outer sidewall and an interior sidewall and defining a well-like heating chamber;

a heating element mounted to said heating unit and disposed between said outer sidewall and said interior sidewall;

a cooking unit at least partially received within said well-like chamber;

WB 002368

a non-conductive housing fixedly mounted to and projecting outside said continuous sidewall of said heating unit, said housing having a bottom wall;

a lower vent in said bottom wall of said housing for admitting relatively cool air to said housing;

an upper vent in said housing for allowing the escape of relatively warm air from said housing;

a programmable circuit positioned within said housing such that heat is convected away therefrom as air passes through said housing and said vents and electrically connected to said heating element to electronically control and program cooking cycles and temperature; and

a control panel on said housing, said control panel being electronically connected to said programmable circuit.

**2. CLAIM 12 AND ITS DEPENDENT CLAIMS 13-19**

12. A programmable slow-cooker appliance comprising:

a heating unit including a bottom and a continuous sidewall extending from said bottom, said bottom and said continuous sidewall defining a well-like chamber;

a heating element mounted to said heating unit for providing heat to said well-like chamber;

a ceramic cooking unit removably positioned in said well-like chamber;

a non-conductive housing fixedly mounted to and projecting outside said continuous sidewall of said heating unit;

a programmable circuit positioned within said housing and electrically connected to said heating element to electronically control and program cooking cycles and temperature;

means including vents in said housing for cooling said programmable circuit by convecting heat away therefrom; and

a control panel mounted to said housing and electrically connected to said programmable circuit.

**3. CLAIM 20 AND ITS DEPENDENT CLAIMS 21-30**

20. A programmable slow-cooker appliance comprising:

a heating unit including a bottom and a continuous sidewall extending from said bottom, said

bottom and said continuous sidewall defining a well-like chamber, said continuous sidewall including an outer sidewall and an interior sidewall;

a heating element mounted to said heating unit and disposed between said outer sidewall and said interior sidewall;

a housing fixedly mounted to and projecting outside said continuous sidewall of said heating unit;

a programmable circuit positioned within said housing and configured to automatically switch said heating element from a cook mode to a lower temperature warm mode at the end of a set cooking time;

a control panel mounted to said housing and including a user interface connected to said programmable circuit for selecting a cooking temperature and cooking time; and

a cooking unit removably positioned in said well-like chamber.

**4. CLAIM 31 AND ITS DEPENDENT CLAIMS 32-36**

**31. A slow-cooker appliance comprising:**

a heating unit including a bottom and a sidewall defining a well-like heating chamber and a heating element for providing heat to said heating chamber;

a ceramic cooking unit including a bottom, a continuous sidewall upstanding from said bottom, and a lip extending outwardly from said sidewall, said cooking unit being dimensioned to be at least partially received within said well-like heating chamber and supported by engagement of said lip with said heating unit;

a housing assembly mounted to and projecting outwardly from said sidewall of said heating unit, said housing assembly including a thermoplastic portion adjoining said outer sidewall, an inclined front surface including a control panel having a user interface, and a vent opening; and

a programmable circuit positioned within said housing assembly, said user interface being connected to said programmable circuit for selecting cooking temperature and cooking time, said programmable circuit being configured to automatically switch said heating element from a cook mode to a lower temperature warm mode at the end of a set cooking time.

**5. CLAIM 37 AND ITS DEPENDENT CLAIMS 38-42**

**37. A programmable slow-cooker appliance comprising:**

a heating unit including a bottom and a continuous sidewall defining a well-like heating

WB 002370

chamber and a heating element positioned for providing heat to said well-like heating chamber;

a cooking unit including a lip and adapted to fit at least partially within said heating unit such that said lip engages a top portion of said heating unit;

a housing assembly mounted to and projecting from said sidewall of said heating unit, said housing assembly including a thermoplastic portion adjoining said sidewall of said heating unit, a bottom wall adjoining said sidewall, and an inclined front surface including a control panel user interface spaced from said sidewall; and

a circuit including a programmable controller positioned within said housing assembly and operatively associated with said user interface, said circuit being configured to allow a user to set both cooking temperature and cooking time and to cause said heating element to operate in a warm mode at the expiration of a set cooking time, said control panel being electronically connected to said circuit.

### C. THE '855 PATENT PROSECUTION HISTORY

The '855 patent's prosecution history, in combination with the '483 prosecution, compels the conclusion that the location of the controller housing fixedly mounted to the outside of the heating unit with a programmable controller mounted to the housing is key to the patentability of the claims.<sup>10</sup> Moreover, in prosecuting this patent, the applicant further established that its controller housing is not in a recess in the bottom of the appliance, but mounted to the sidewall.

#### 1. FIRST PRELIMINARY AMENDMENT

Because all claims were allowed in the prosecution of the '483 parent (after claims 1 and 13 were amended as recited above), new claims 20-33, including two independent claims, were added by preliminary amendment when the '855 continuation application was filed in March 2003. Claims 13-19, as originally presented in the '483 application, remained in the case.

The first independent claim (claim 20 of the application) was identical to claim 1 of the '483 patent *except* it did not recite the cooking unit. It did require the controller housing to be fixedly mounted to the heating unit. The second independent claim (claim 30) was identical to claim 11 *except* it did not recite the top wall.

The preliminary amendment also amended the first paragraph in the summary of invention so that it no longer referred to "the invention", but rather to "one embodiment of the invention." It also called for "a programmable controller mounted thereto ~~on its outside, and preferably~~ mounted via a controller housing...."

<sup>10</sup> *Watts v. XL Sys. Inc.*, 232 F.3d 877, 884 (Fed. Cir. 2000) (prosecution history of parent application relating to a claim limitation applies to subsequently issued patents having same limitation).

WB 002371

## 2. SECOND PRELIMINARY AMENDMENT

On July 9, 2003, prosecution of the '855 patent application was transferred from Brinks Hofer (the patent firm that had prosecuted the '483 patent and filed the continuing '855 application) to Hoffmann & Baron, LLP and a terminal disclaimer was filed (without any request from the PTO). Also, a second preliminary amendment was filed, canceling all previous claims and filing new claims 34-58, including independent claims 34, 45, and 53. These claims, in contrast to the earlier filed claims, focused on the convection feature, describing the location of the vents (claim 34); the "means for cooling said programmable circuit by convecting heat away therefrom" (claim 45); and "means for ventilating said housing" for the programmable circuit (claim 53).

## 3. JULY 2003 OFFICE ACTION RESPONSE

On July 30, 2003, an office action issued, rejecting all claims as obvious in view of Rivelli, (U.S. Patent No. 3,904,852) and either Skutt (U.S. Patent No. 5,734,149) or Polster (U.S. Patent No. 5,539,185). Copies of the first office action and the cited prior art are attached.

In response, on November 13, 2003, the applicant amended all three existing independent claims, namely, claims 34, 45, and 53, and added new claims 59-75, including independent claims 64 and 70.

In argument, the applicant explained that claims 34 and 53 had been amended to include elements that "characterize slow cookers" and that claim 45 and new claims 64 and 70 already described such features.

In addition, the applicant argued, with respect to claims 34 and 45, that Rivelli (relating to fat fryers) "does not have applicability to slow cookers" "[a]lthough concerned with protecting solid state components from overheating." Rivelli's circuit board module is mounted in a dead air space compartment "rather than projecting from an outer sidewall as described in the independent claims of the present application."

According to the applicant, Skutt (relating to a pottery kiln) provides electronic controls within a chimney. If Skutt and Rivelli were combined, the result would be that Rivelli's dead air space would no longer be dead air, but rather a chimney with convection flow - "contrary to the teachings of Rivelli."

Likewise, independent claims 53, 64, and 70 are, according to the applicant, "directed to slow cookers that are caused to automatically switch from a cook mode to a lower temperature warm mode at the end of a set cooking time." Applicant pointed out that neither Rivelli nor Skutt discloses such automatic switching.

The applicant likewise distinguished the combination of Rivelli and Polster by first noting that neither apparatus was a slow cooker. (Polster was for cooking packaged food by providing fluid flow action). In addition, the Polster cooling technique, "flushing with ambient air", would not be "compatible" with Rivelli. Moreover, the cited art did not disclose switching to a warming mode following a cooking mode.

WB 002372

Finally, in a preemptive move, applicant distinguished Schmidt. Although Schmidt was not cited by the Examiner, the applicant explained the relevance of Schmidt in that it had to do with an electronically controlled roaster and that its background section described slow cookers, as well as other electric cooking appliances. Schmidt "recognize[d] the problem of locating electronics in close proximity to a cooking appliance, and the fact that they must be kept cool enough to prevent failures." Applicant then says:

Schmidt takes a somewhat different approach to addressing the problem of maintaining the electronic controls at an acceptable temperature than that described in claims 34 and 45. A recess is formed in the bottom of the appliance, and the housing for the PC board is positioned in the recess. The housing is fastened to the bottom wall of the appliance. Such a recess is unnecessary in the Applicant's appliance where the housing for the electronics is mounted to the sidewall of the heating unit rather than beneath it.

Applicant also submitted a copy of its provisional application and asserted that the present independent claims were supported by the provisional application (which predates the Schmidt patent's application filing date).

These amendments and argument were successful and on February 9, 2004, the examiner allowed the application without further amendment. The Examiner provided a statement of reasons for allowance. These reasons were:

[T]he prior art of record does not teach: as per claims 34-44, use of an interior and exterior sidewall with a heater in between in combination with a separate housing for the controller and display which is fixedly mounted to the sidewall, with the housing having vents in lower and upper portion; as per claims 45-52, showing of a separate vessel of ceramic within the well like opening coupled with the structure set forth above; as per claims 53-75 use of a separate control housing of thermoplastic material which projects outward from the sidewall and is fixedly mounted to control the slow cooker.

The issue fee was paid and the patent issued in due course.

#### **D. CONSTRUING THE '855 PATENT CLAIMS**

With respect to the '855 claims, which require the controller's housing to be fixedly mounted to and projecting outside the sidewall of the heating unit (issued claims 1- 36) or "mounted to and projecting outwardly from said sidewall of the heating unit" (issued claims 37-42), the specification and the prosecution history of both this and the parent application compel the conclusion that the claims are limited to a slow cooker with a programmable controller that is mounted to a controller housing which is in turn mounted to the outside of the heating unit's sidewall. Even claims 37-42 (claims 70-75, as filed) were allowed by the examiner on the basis that the prior art does not teach "a separate control housing of thermoplastic material which projects outward from the sidewall and is fixedly mounted to control the slow cooker."

Moreover, applicant's argument, with respect to claims 34 and 45 (issued claims 1 and 12), that the recess in the bottom of Schmidt's appliance for the controller's housing is "unnecessary in

the Applicant's appliance where the housing for the electronics is mounted to the sidewall of the heating unit rather than beneath it" indicates that such a configuration is not covered by these claims, or, indeed, any of the other claims, which all use language locating the housing as mounted to the sidewall of the heating unit.<sup>11</sup>

#### IV. WEST BEND'S SLOW COOKER DOES NOT INFRINGE EITHER PATENT

A patent is infringed if one or more of the claims in that patent is infringed. The determination as to whether a device infringes a patent claim involves a two-step analysis.<sup>12</sup> First, the claims are interpreted to determine their scope and meaning.<sup>13</sup> Second, the properly construed claims are compared to the accused device.<sup>14</sup> If the accused device incorporates all of the elements (or their equivalents) recited in a claim, then the claim is infringed. If each claim element is present in the accused device, there is literal infringement. The doctrine of equivalents "extend[s] the right to exclude beyond the literal scope of the claims."<sup>15</sup> Where there are insubstantial differences between the claimed invention and the accused device, infringement based on equivalence may be found even though the claims do not literally cover the accused device.<sup>16</sup>

As explained above, we have construed the meaning and scope of all the claims of both the '483 and '855 patents as requiring a programmable controller that is mounted to a housing that in turn is mounted to the exterior of the heating unit. We need only consider whether the independent claims are infringed because dependent claims cannot be infringed if the claims from which they depend are not infringed.<sup>17</sup>

According to the patents and their prosecution histories, mounting the programmable controller in a housing that is mounted to the outside of the heating unit solves a significant problem with prior art cookers and distinguishes the claimed invention from the prior art. Having taken this

<sup>11</sup> "It is irrelevant in this case whether [the] prosecution history remarks were directed to [this] claim specifically because there is no clear indication that they were not." *Watts*, 232 F.3d at 383 ("remarks ... are general in nature and apply to any claim that contains the ... limitation" whether the statement was made in prosecuting a particular patent or an earlier, related patent).

<sup>12</sup> *Southwall Tech., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir.), *cert. denied*, 516 U.S. 987 (1995).

<sup>13</sup> *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (en banc), *aff'd*, 116 S. Ct. 1384 (1996).

<sup>14</sup> *Baxter Healthcare Corp. v. Spectramed, Inc.*, 49 F.3d 1575, 1582 (Fed. Cir.), *cert. denied*, 516 U.S. 906 (1995).

<sup>15</sup> *Johnson & Johnston Assocs. Inc. v. R.E. Service Co., Inc.*, 285 F.3d 1046, 1053 (Fed. Cir. 2002).

<sup>16</sup> *Id.*

<sup>17</sup> *See supra* n. 3.

WB 002374

express position in amending the claims and arguing patentability, the patent owner (Holmes) cannot now seek to read the patent claims to cover slow cookers that lack such a feature.<sup>18</sup> That is, slow cookers, like West Bend's, where the programmable controller is located and mounted inside the heating unit fall outside the scope of the '483 and '855 patents. Holmes cannot now attempt to use its patents to recapture a slow cooker with an inside-mounted controller because it expressly gave up or disclaimed such subject matter to obtain allowance of the patents.

#### A. THE '483 PATENT IS NOT INFRINGED

We concluded above that the claims of the '483 patent must be limited to a slow-cooker or a method of using a slow cooker where the programmable controller is mounted to a controller housing which is fixedly mounted to an *outside* of the heating unit in light of the claim language, the specification, and the prosecution history.

West Bend's programmable controller is mounted within a housing that is mounted to the bottom of and inside the heating unit, and not the outside. Although West Bend's control panel is mounted to the outside of the heating unit, the panel is connected to a non-programmable circuit board that is mounted inside the heating unit and it, in turn, transmits the user input information from the control panel to the programmable controller. The non-programmable circuit board that is connected to the control panel does not include circuitry or logic that would allow a user of the cooker to electronically control and program cooking cycles and temperature. The control panel and its associated non-programmable circuit board merely allow a user to input the desired cooking parameters to program the programmable controller mounted to the bottom of and inside the heating unit, which controls the cooking cycle and temperature. In view of this different structure, we believe that no claim of this patent is infringed, either literally or under the doctrine of equivalents.

#### 1. CLAIMS 1-10

Specifically, claim 1 and its dependent claims 2-10 call for a slow-cooker having a heating unit, a cooking unit adapted to fit (at least partially) within the heating unit, "a controller housing fixedly mounted to an *outside* of the heating unit," and "a programmable controller mounted to the housing to control the heating unit." The controller is configured to convect heat (e.g., transfer heat by the circulation of currents from one region to another) away from the controller. In our opinion, these claims are not infringed because West Bend's programmable controller is mounted *inside the bottom* of the heating unit within the heating cavity, *not* to a housing that is mounted outside the heating unit. And although West Bend's control panel is mounted to the outside of the heating unit, we do not believe it can be considered a controller housing as called for by claim 1. The control panel does not contain a programmable controller and is not configured to convect heat as required by claim 1. Moreover, the printed circuit board associated

<sup>18</sup> See *SciMed*, 242 F.3d at 1341; *Microsoft Corp. v. Multi-Tech Systems, Inc.*, 357 F.3d 1340, 1346-48 (Fed. Cir. 2004). "Because the amendment distinguished the [prior art] patent, [the patentee] cannot now maintain that the proper scope of the ... term is broad enough to encompass that [prior art]." *Musco Corp. v. United States*, 303 F.3d 1316, 1325 (Fed. Cir. 2002).

WB 002375

with the control panel is mounted *inside* the heating unit, not to the control panel, and is not programmable to control the heating unit. The printed circuit board associated with the control panel receives the time and temperature data selected by a user and generates electrical signals to transmit such input data to the programmable controller located in the bottom of the heating unit. Thus, in our opinion, West Bend's slow cooker does not literally infringe claim 1.

We believe there is no infringement under the doctrine of equivalents because mounting West Bend's programmable controller inside the bottom of the heating unit rather than outside the unit represents a substantial difference from the slow cooker of claim 1; indeed, placing West Bend's programmable circuit inside the heating unit is contrary to the express teachings of the '483 patent. Because West Bend's programmable controller's housing is located in a substantially different location, and the controller is protected from the heat in a substantially different way, from that of claim 1, West Bend's cooker does not in our opinion infringe claim 1 under the doctrine of equivalents.<sup>19</sup>

Even if the circuit board associated with the control panel is considered part of the programmable controller, there still would be no infringement. While the control panel is mounted to the outside of the heating unit, the associated circuit board is not mounted to the control panel; it is mounted inside the heating unit by means of a plastic cap or housing that is mounted to the inside of the outer sidewall of the heating unit. Furthermore, the control panel is not configured to convect heat away from the circuit board.

Moreover, Holmes is now estopped from contending that a slow cooker like West Bend's with a programmable controller mounted inside the heating unit is equivalent to its claimed invention. As explained above, Holmes repeatedly argued during prosecution of the '483 patent application in order to distinguish its claimed invention over the prior art that the controller housing in its slow cooker is mounted to the outside of the heating unit unlike the prior art. Holmes cannot now seek to recapture within the scope of its claims subject matter that it expressly gave up, namely, a slow cooker, such as West Bend's, with a programmable controller mounted inside the heating unit.<sup>20</sup> "The public has a right to rely on such definitive statements made during prosecution."<sup>21</sup>

<sup>19</sup> *Oak Tech. Inc. v. Int'l Trade Comm'n*, 248 F.3d 1316, 1328-29 (Fed. Cir. 2001) ("The ... limitation is imposed by the claim language itself, and the written description simply confirms this understanding. There is no discussion anywhere in the intrinsic record of embodiments [to the contrary]. More importantly, even if such a disclosure existed, these embodiments would not be covered by the language selected by the claim drafter.").

<sup>20</sup> *Spectrum Int'l, Inc. v. Sterlite Corp.*, 164 F.3d 1372, 1378-79 (Fed. Cir. 1998) ("[b]y distinguishing the claimed invention over the prior art, an applicant is indicating what the claims do not cover.")

<sup>21</sup> *Digital Biometrics, Inc. v. Identix, Inc.*, 149 F.3d 1335, 1347 (Fed. Cir. 1998).

WB 002376

## 2. CLAIMS 11-12

Claims 11 and 12, directed to a control housing, are not infringed in our opinion because West Bend's "control housing" lacks the lower and upper openings as called for by the claims and does not have a circuit board mounted "behind the front wall." West Bend's programmable circuit board is mounted to a housing that is mounted inside the bottom of the heating unit. The top wall of the housing does not have an upper opening, as called for by claims 11-12. Moreover, the programmable circuit board is not mounted behind a front wall of the housing apart from a wall of the heating unit. The West Bend programmable controller is mounted indirectly to the inside of the bottom wall of the heating unit. As to West Bend's control panel mounted to the front of the heating unit, it has no openings and the associated printed circuit board is not mounted apart from a wall of the heating unit. To the contrary, the circuit board is mounted (indirectly) to the inside of a wall of the heating unit. These represent substantial differences from the claimed slow cooker. Thus, we do not believe claim 11 or its dependent claim 12 is infringed, either literally or under the doctrine of equivalents.

## 3. CLAIMS 13-19

Claim 13 and its dependent claims 14-19 recite a method of using a slow cooker with a programmable controller to select a cooking temperature and time, which is followed by an automatic change to a lower temperature after the selected time elapses. The programmable controller is mounted to a housing "fixedly mounted to a heating unit." As explained in connection with the '483 prosecution history, these claims should be construed as requiring that the controller housing be fixedly mounted to the *outside* of the heating unit.<sup>22</sup> West Bend's programmable controller is mounted to the inside of the bottom of the heating unit. As to West Bend's control panel, as explained above in connection with claims 1-10, it does not contain a programmable controller, the associated circuit board merely receives time and temperature input data from a user and transmits the data to the programmable circuit board mounted to the inside of the bottom of the heating unit. Moreover, the circuit board associated with the front control panel is mounted to the inside of the heating unit. In our opinion, all of these differences between West Bend's slow cooker and the cooker of claims 13-19 are substantial. Therefore, because West Bend's programmable controller is not mounted outside the heating unit, but

<sup>22</sup> While the language of claim 13 may appear literally to read on West Bend's slow cooker, we do not believe it can be properly so construed. In our opinion the '483 applicant disclaimed such an interpretation during prosecution of the '483 application and limited the scope of claim 13 and its dependent claims to a cooking method that uses a programmable slow cooker having a programmable controller mounted to or within a housing that is mounted to the outside of the heating unit. *Microsoft*, 357 F.3d at 1347 ("A patentee may also limit the scope of the claims by disclaiming a particular interpretation during prosecution."). The '483 patent specification also supports our interpretation of claim 13. See, e.g., *Watts*, 232 F.3d at 882 ("[O]ne purpose of examining the specification is to determine if the patentee has limited the scope of the claims.")

WB 002377

within the heating unit, we believe it does not infringe claims 13-19, either literally or under the doctrine of equivalents.<sup>23</sup>

#### B. THE '855 PATENT IS NOT INFRINGED

We have already explained that all the claims of the '855 patent require the programmable controller be mounted to a controller housing which is mounted outside the heating unit to the sidewall. Claims 1-30 exclude a slow cooker like West Bend's in which the controller housing is mounted inside of and to the bottom of the heating unit, both literally and under the doctrine of equivalents. Claims 1, 12, and 20 (the only independent claims in this group) were amended during prosecution of the '855 patent application to overcome a prior art rejection to call for the housing for the programmable circuit to be mounted to and *projecting outside* the sidewall of the heating unit. Because this amendment was made for patentability reasons, it should not be given any scope under the doctrine of equivalents. The remaining independent claims were added at the same time the aforementioned amendment was made and also call for the programmable control circuit housing to "project[] outwardly said sidewall" (claim 31) or "projecting from said sidewall of said heating unit" (claim 37).<sup>24</sup>

Claim 1, and its dependent claims 2-11, expressly require the housing for the programmable circuit to be fixedly mounted to and projecting outside the sidewall of the slow-cooker and further require the housing to have an upper and lower vent. This claim defines the heating unit as including a bottom and a continuous sidewall extending from the bottom. The sidewall includes both an outer and an interior sidewall, with a heating unit therebetween. There is also a control panel on the housing electronically connected to the programmable circuit. Similarly, like claim 1, independent claim 12 and its dependent claims 13-19 call for the housing for the programmable circuit housing to be fixedly mounted to and projecting outside the sidewall. This claimed housing also has vents. Likewise, claim 20 and its dependent claims 21-30 call for the programmable circuit to be positioned in a housing that is fixedly mounted to and projecting outside the sidewall, with the circuit being configured to switch from a cook mode to a warm mode after a set cooking time. The control panel is mounted to this housing.

In our opinion, West Bend's cooker does not infringe claims 1-30 because its controller housing is located inside the bottom of the heating unit (in the heating cavity between an outer and

<sup>23</sup> Moreover, as will be explained in the report we are preparing on the validity of the '483 and '855 patents, we believe there are good arguments that claims 13-19 are invalid in light of prior art not considered by the Patent Office, particularly in light of the Weiss U.S. Patent No. 4,307,287, a copy of which is attached.

<sup>24</sup> Distinguishing arguments and amendments made with respect to claims 1-30 should apply with uniform force to claims 31-42 that were not amended. See *Digital Biometrics*, 149 F.3d at 1347; *Modine Mfg. Co. v. U.S. I.T.C.*, 75 F.3d 1545, 1551 (Fed. Cir. 1994). Moreover, a limitation must be attributed the same scope throughout the claims, *VI/Beta Ventures, Inc. v. Tura LP*, 112 F.3d 1146, 1159 (Fed. Cir. 1997), whether the limitation is expressed in similar or different words. See, e.g., *Mycogen Plant Science, Inc. v. Monsanto Co.*, 243 F.3d 1316, 1329 (Fed. 2001).

WB 002378

interior bottom wall); it does not project outside the sidewall. Further, the West Bend control panel on the front of the heating unit does not house a programmable circuit or controller to control and program cooking cycles and temperature. The West Bend control panel is associated with a non-programmable circuit board that, like West Bend's programmable controller, is located *within* the heating unit. Having amended claims 1-30 to expressly require a housing for the programmable circuit fixedly mounted to and projecting outside the sidewall of the heating unit in order to obtain allowance of the '855 patent over the cited prior art (where the controller is mounted inside the heating unit), we believe that Holmes should be estopped from asserting that West Bend's slow cooker with a programmable controller mounted inside the heating unit is equivalent to the claimed invention.

Indeed, as previously explained, mounting the West Bend programmable controller inside the heating unit represents a substantial difference from the slow cooker of claims 1-30. Moreover, the West Bend control panel, mounted to the outside front wall of the heating unit, does not include any vents as called for by claims 1-19. In fact, we do not believe that the West Bend control panel should be considered a "housing" as called for by claims 1-30. Each of these claims expressly calls for a separate "control panel" element mounted to the controller housing. Construing claims 1-30 to cover West Bend's cooker by equating the West Bend front control panel to the claimed controller housing would thus eliminate in its entirety the separate claim limitation calling for a control panel, which was added by amendment to claim 20.<sup>25</sup>

Claim 31 and its dependent claims 32-36 also require the housing for the programmable circuit to project outwardly from the heating unit's sidewall, a control panel located on an inclined front surface of the housing, and the housing to have a vent opening. As discussed with respect to claims 1-30, West Bend's cooker does not have a programmable circuit housing that projects outwardly from the sidewall of the heating unit, and its control panel is on a vertical surface, not on an inclined surface, let alone on the programmable circuit's housing. Moreover, the control panel is not vented. Furthermore, as described above, both West Bend's programmable controller and the circuit board associated with the front control panel are mounted to the inside of the heating unit, not to an outside housing as required by claims 31-36. Thus, we believe that West Bend's cooker does not infringe these claims, either literally or under the doctrine of equivalents.

Claim 37 and dependent claims 38-42 also require the slow cooker to have a housing assembly "mounted to and projecting from" the sidewall with a programmable controller positioned within the housing assembly. These claims are not infringed because West Bend's programmable controller is not within a housing projecting from the heating unit's sidewall; the only thing

---

<sup>25</sup> "Each element contained in a patent claim is deemed material to defining the scope of the patented invention, and thus the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole. It is important to ensure that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety." *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 29 (1997).

WB 002379

projecting from the sidewall of the slow cooker is the control panel, which is connected to a non-programmable circuit that is located within and mounted to the inside of the heating unit. The West Bend circuit board that controls the cooking time and temperature, including the warm mode after the set cooking time expires, is mounted inside the bottom of the heating unit, which is contrary to the claims and the prosecution history. Claim 37 also requires that the housing assembly have an inclined front surface including a control panel user interface. The West Bend control panel is vertical and mounted directly to a sidewall of the heating unit, not to the housing for the programmable controller. Accordingly, in our opinion, there is no infringement of claims 37-42, either literally or under the doctrine of equivalents.

S:\client\095511\9072\CO478897.1

WB 002380

# EXHIBIT C

## PART 2

WEST BEND  
SLOW COOKER

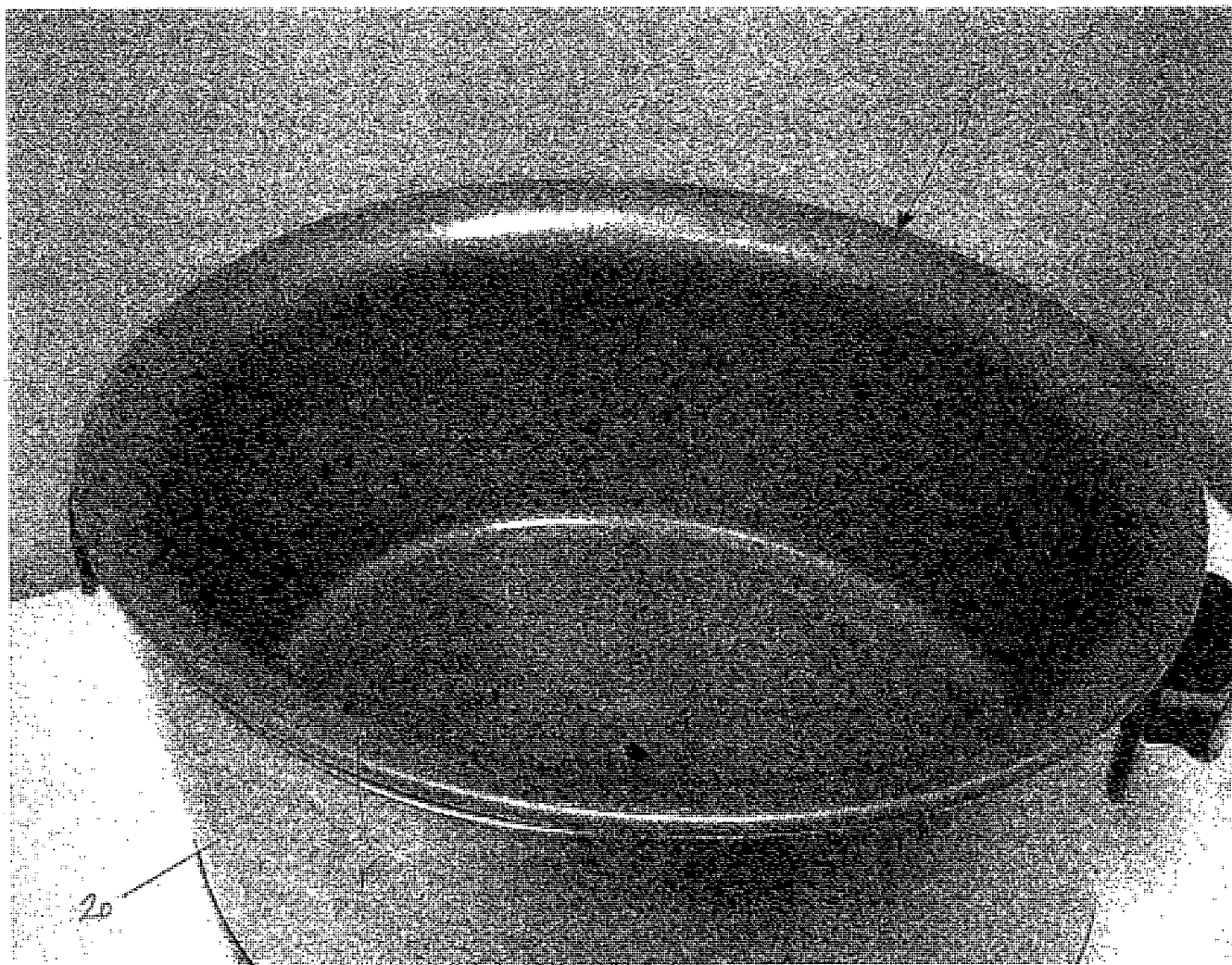
WB 002381

Highly Confidential  
Attorneys' Eyes Only



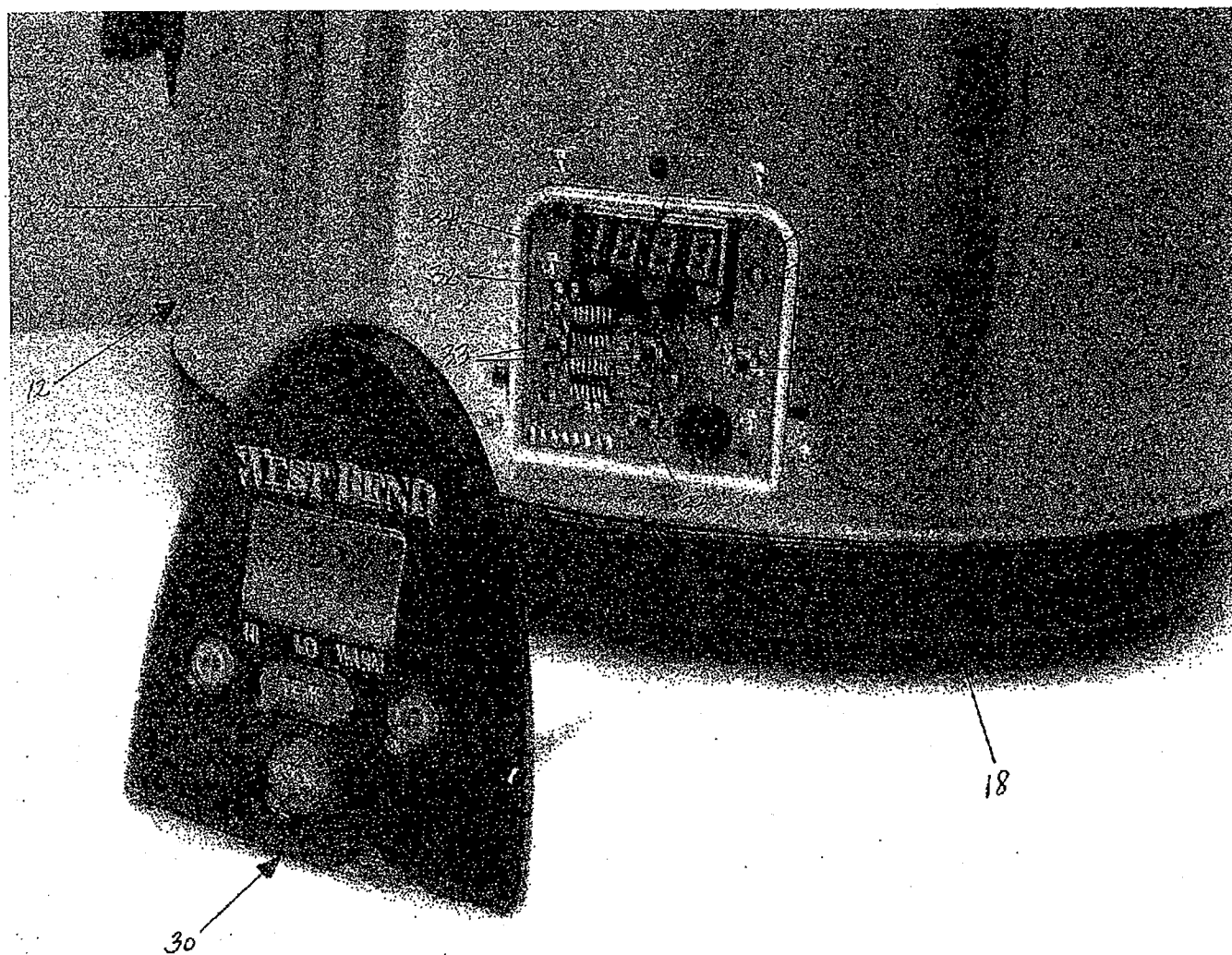
WB 002382

Highly Confidential  
Attorneys' Eyes Only



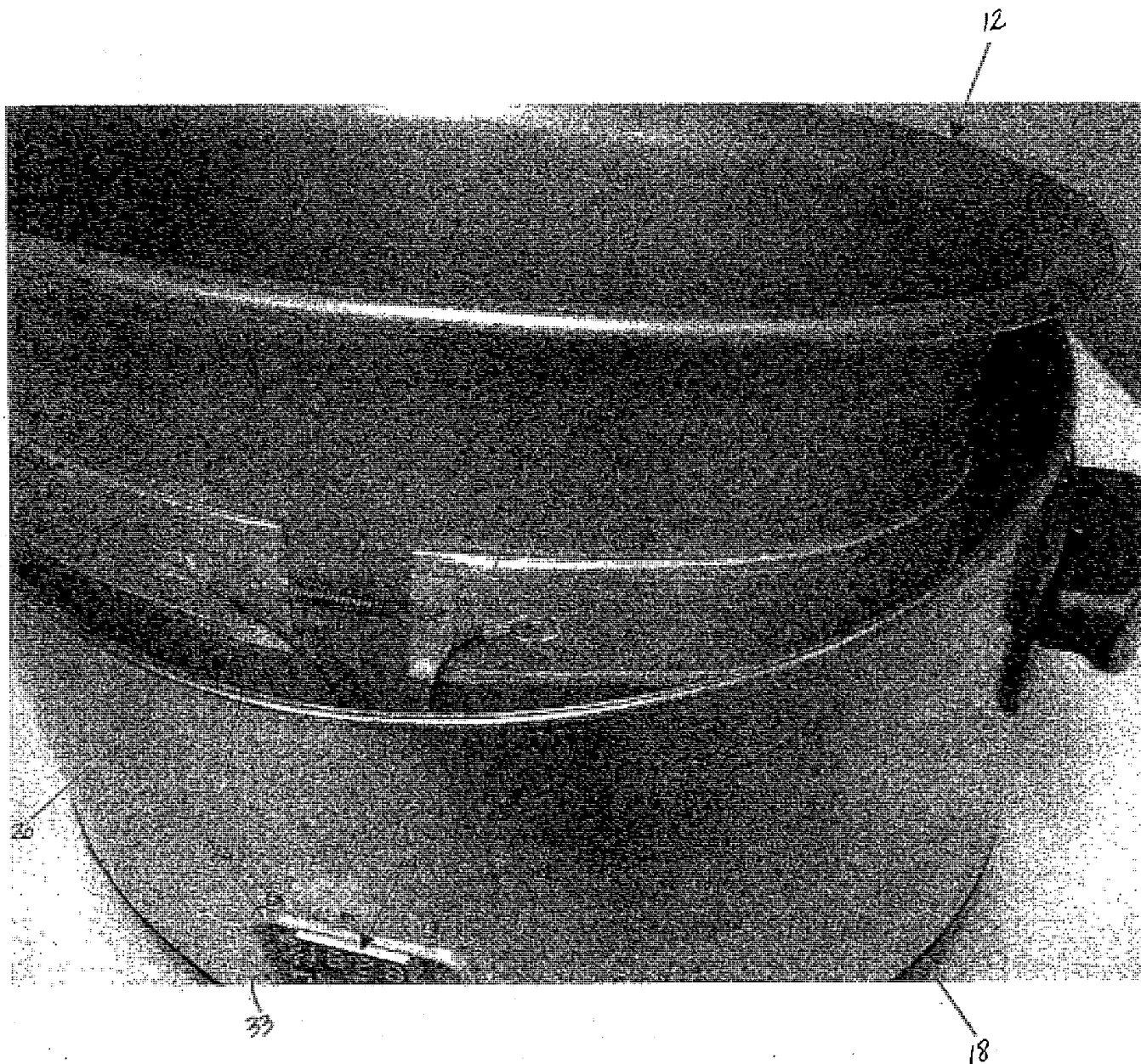
WB 002383

**Highly Confidential  
Attorneys' Eyes Only**



WB 002384

Highly Confidential  
Attorneys' Eyes Only

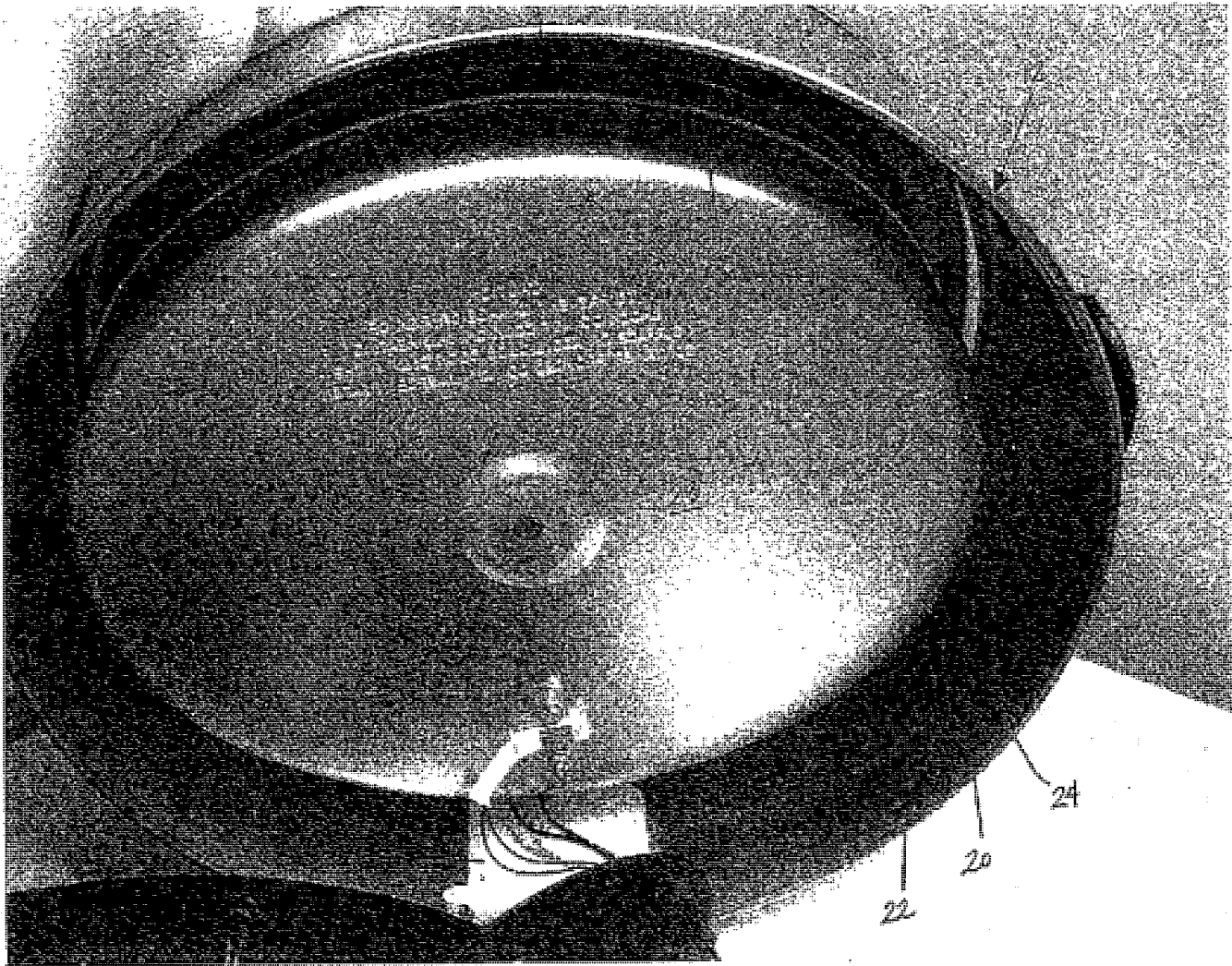


WB 002385

Highly Confidential  
Attorneys' Eyes Only

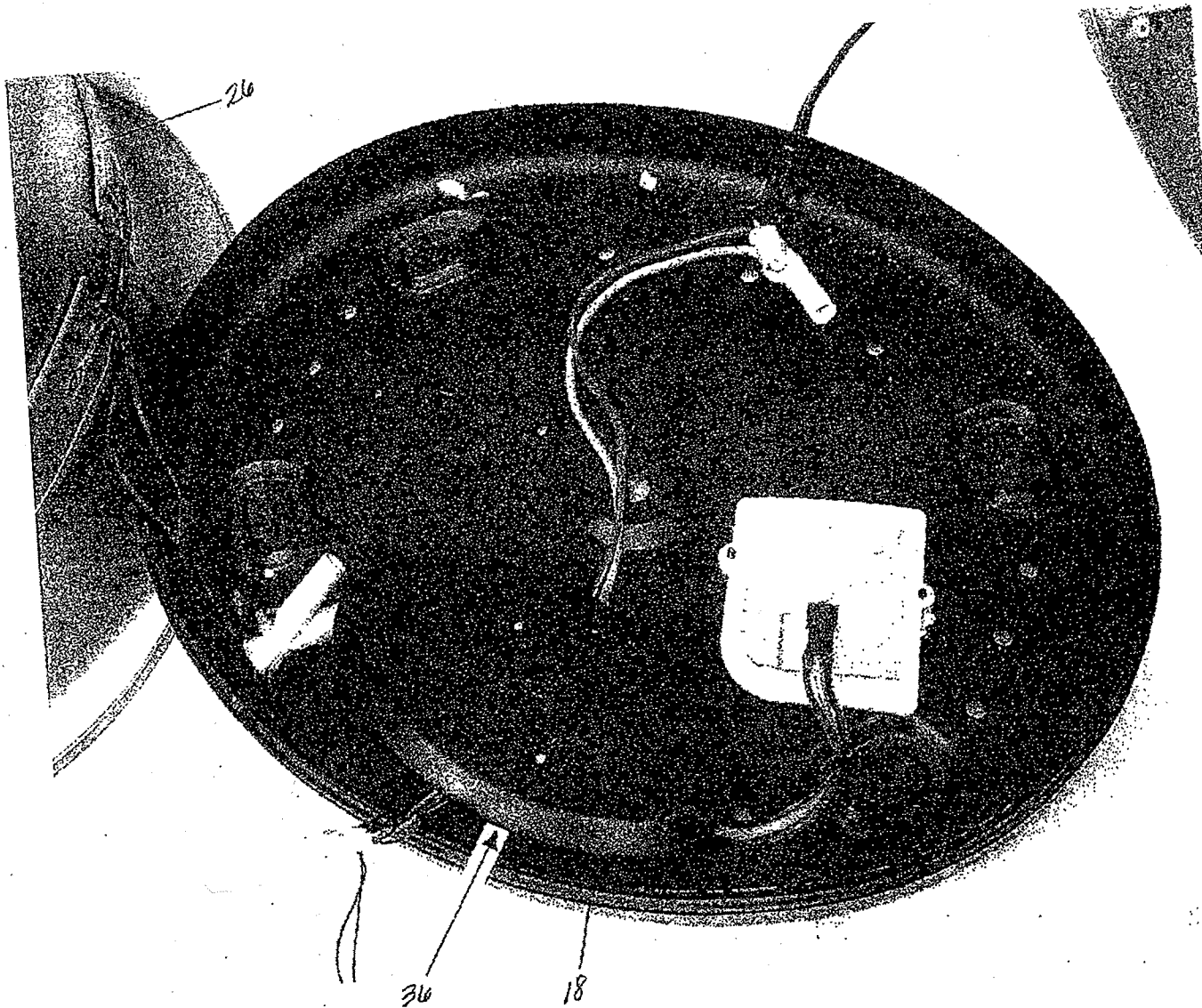
# EXHIBIT C

## PART 3



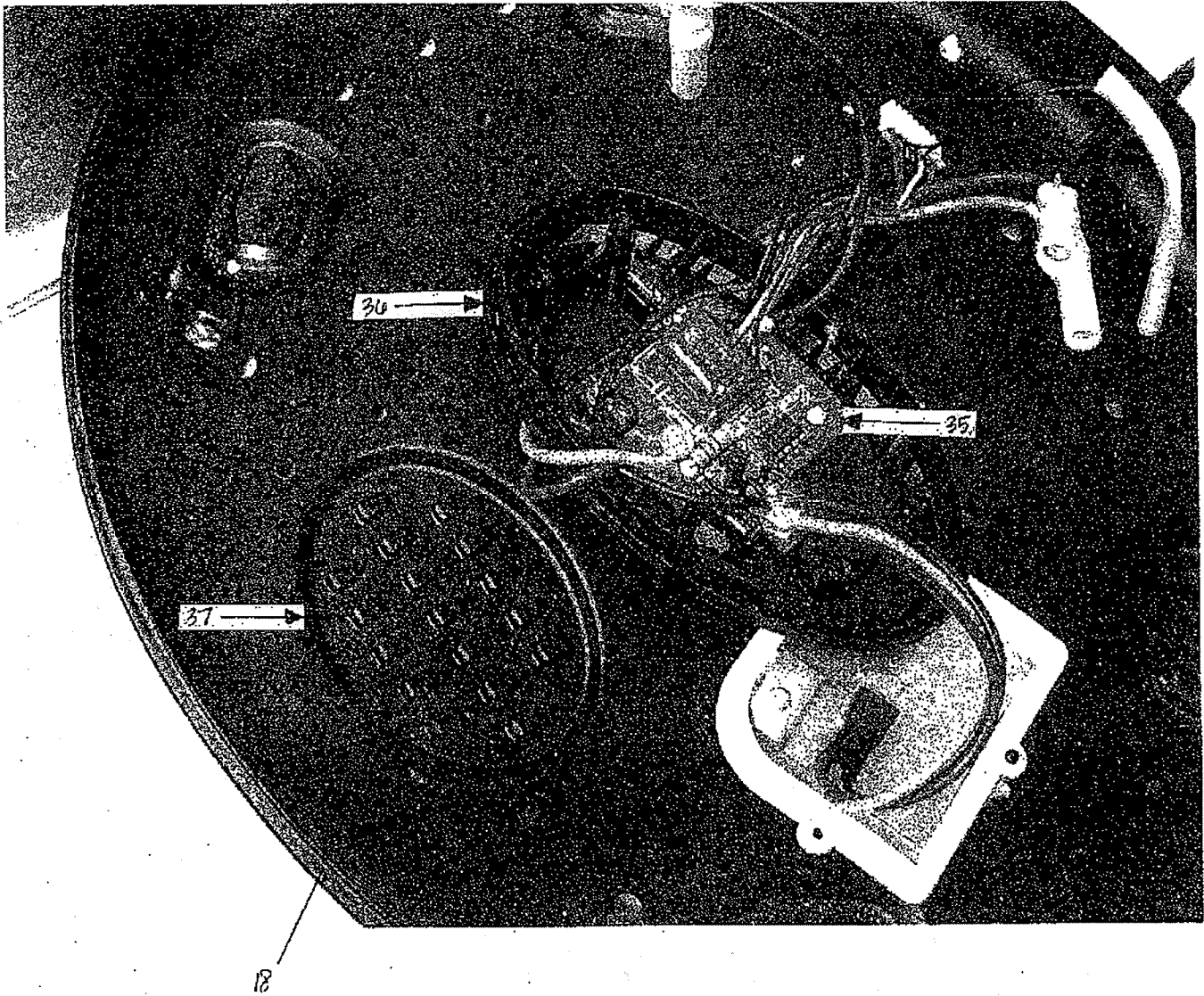
WB 002386

Highly Confidential  
Attorneys' Eyes Only



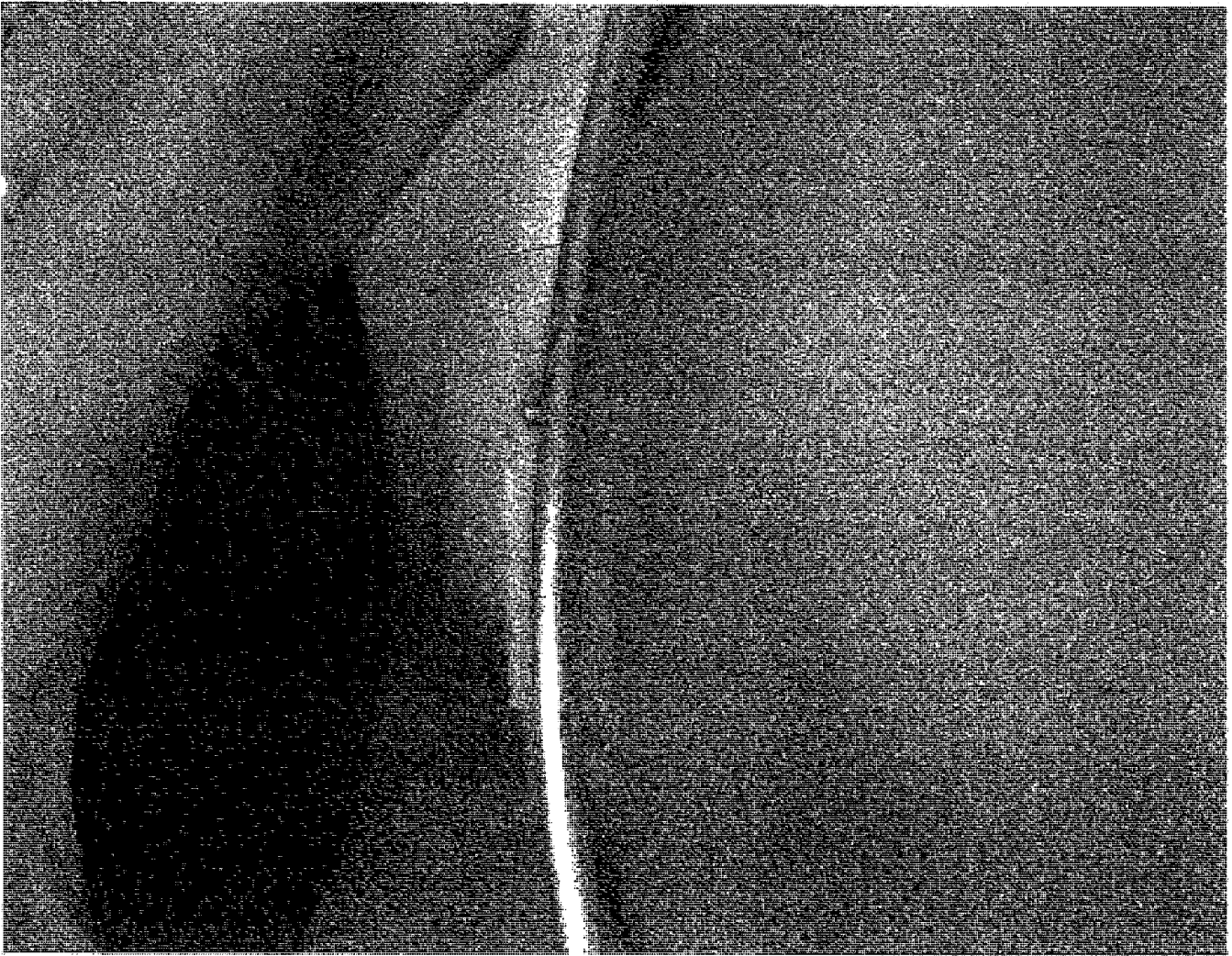
WB 002387

Highly Confidential  
Attorneys' Eyes Only



WB 002388

Highly Confidential  
Attorneys' Eyes Only



WB 002389

**Highly Confidential  
Attorneys' Eyes Only**

# EXHIBIT C

## PART 4

WEST BEND  
INSTRUCTION MANUAL

WB 002390

Highly Confidential  
Attorneys' Eyes Only

# WEST BEND®

## HOUSEWARES

### 6-Quart Electronic Crockery Cooker

#### Instruction Manual



Register this and other West Bend® Housewares products through our website:

**[www.westbend.com](http://www.westbend.com)**

Important Safeguards .....	2
Heat Precautions .....	2
Electricity Precautions .....	3
Precautions For Use Around Children .....	4
Using Your Crockery Cooker .....	4
Helpful Hints .....	5-6
Cleaning Your Crockery Cooker .....	6
Recipes .....	7-11
Warranty .....	12

**SAVE THIS INSTRUCTION MANUAL FOR FUTURE REFERENCE**

**WB 002391**

**Highly Confidential  
Attorneys' Eyes Only**

### Important Safeguards



#### CAUTION

To prevent personal injury or property damage, read and follow all instructions and warnings.

When using electrical appliances, basic safety precautions should always be followed including the following:

- Read all instructions, including these important safeguards and the care and use instructions in this manual.
- Do not use appliance for other than intended use.
- The use of accessory attachments not recommended by West Bend® Housewares may cause injuries.
- Do not use ceramic pot or glass cover if chipped, cracked or has deep scratches as weakened glass and ceramic can shatter during use. Discard immediately. See Replacement Part section in this booklet on how to obtain a replacement part.
- Do not attempt to repair this appliance yourself.
- For household use only.



#### CAUTION

To prevent burns, personal injury or property damage, read and follow all instructions and warnings.



#### Heat Precautions

- Do not touch hot surfaces. Use hot pads or oven mitts if you lift or carry the ceramic pot or cover when it is hot.
- Do not move an appliance containing hot oil or other hot liquids.
- Lift cover slowly, directing steam away from you.
- Set ceramic pot and cover on hot pad, trivet or other heat protective surface. Do not set hot ceramic pot or cover directly on the counter, table or other surface.
- Do not preheat the heating base.
- Do not add frozen/cold foods or liquids into heated ceramic pot. Sudden temperature change may cause the cover or ceramic pot to crack or shatter.
- Do not use the ceramic pot or cover on the stove top, under the broiler, in the freezer, or in the oven. You may use the ceramic pot in the microwave oven, but do not place the glass cover in the microwave oven as it has a metal ring.

WB 002392

Highly Confidential  
Attorneys' Eyes Only



## CAUTION

To prevent electrical shock, personal injury or property damage, read and follow all instructions and warnings.



### Electricity Precautions

- To protect against electric shock do not immerse cord, plugs, or other electric parts in water or other liquids.
- Do not operate any appliance with a damaged cord or plug.
- Do not operate when the appliance is not working properly or when it has been damaged in any manner. For service information see warranty page.
- Do not use electric parts outdoors, or place them on or near a gas or electric burner, in a heated oven, or in the refrigerator.
- Always turn control to OFF and unplug the appliance from outlet when not in use and before cleaning.
- Your crockery cooker has a short cord as a safety precaution to avoid pulling, tripping or entanglement. To avoid pulling, tripping or entanglement, position the cord so that it does not hang over the edge of the counter, table or other flat surface areas or touch hot surfaces.
- While use of an extension cord is not recommended, if you must use one, make sure the cord has the same or higher wattage as the crockery cooker (wattage is stamped on the underside of the crockery cooker base). To avoid pulling, tripping or entanglement, position the cord so that it does not hang over the edge of the counter, table or other flat surface areas or touch hot surfaces.
- Use an electrical outlet that accommodates the polarized plug on the crockery cooker. On a polarized plug, one blade of the plug is wider than the other. If the plug does not fit fully into the outlet or extension cord, reverse the plug. If the plug still does not fit fully, contact a qualified electrician. Do not alter the plug.
- Do not use an outlet or extension cord if the plug fits loosely or if the outlet or extension cord feels hot.

WB 002393

Highly Confidential  
Attorneys' Eyes Only



## CAUTION

To prevent burns or other personal injuries to children, read and follow all instructions and warnings.

### Precautions For Use Around Children

- Always supervise children.
- Do not allow children to operate or be near the crockery cooker, as the outside surfaces are hot during use.
- Do not allow cord to hang over any edge where a child can reach it. Arrange cord to avoid pulling, tripping or entanglement.

## SAVE THESE INSTRUCTIONS

### Using Your Crockery Cooker - Everyday Use

- Before using for the first time, wash the ceramic pot and cover with hot soapy water, rinse and dry.
1. Place heating base on dry, level, heat-resistant surface, away from any edge.
  2. Place foods into ceramic pot, cover and place into heating base. If you need to brown or precook foods – you must use a separate skillet or pan. Direct heat from the stovetop or oven will break the ceramic pot. Plug cord into a 120 volt AC electric outlet only.
  3. Press On/Off button. On will be displayed and HI temperature setting is indicated with a flashing green light.
  4. Press to select HI, LO, or WARM setting.
  5. To turn cooker on press . Display will count up, showing elapsed cooking time.

#### To program cooking time:

1. Press . Note: Only HI or LO settings are available for programed cooking time.
2. Press (time) button to scroll up to desired cooking time.
3. Press to start cooking cycle. When the cycle is completed the crockery cooker will shift to the WARM setting and timer will count up from zero showing the elapsed time on warm.
4. Press On/Off button to turn off your crockery cooker.

WB 002394

Highly Confidential  
Attorneys' Eyes Only

### Helpful Hints

- To extend or change cooking cycle time, press time button and scroll to new cycle time. Press Cook to initiate cycle.
- To change temperature setting, press the TEMP button at any time. Changing temp to WARM will automatically shift timer to show elapsed time. Programmable cooking is not available with WARM setting.
- The Cook button confirms your suggested settings and turns on the crockery cooker. If you fail to press the cook button, the display will beep and flash to alert you. After 10 seconds, the crockery cooker will start in the displayed mode.
- The crockery cooker will automatically shut off after 20 hours of total cooking time. To disable this feature, press the cook and timer buttons simultaneously. You will now be able to cook more than 20 hours, and the display will continue to flash 19:59. Press On/Off button to turn off the cooker.
- Some smoke and/or odor may occur upon heating due to the release of manufacturing oils – this is normal.
- Some expansion/contraction sounds may occur during heating and cooling – this is normal.
- If your crockery cooker has a Warm function, do NOT cook foods on this setting as the temperature does not get hot enough to cook foods. Use Warm setting only to keep hot, cooked foods warm for serving.
- Avoid removing the cover when cooking. Cooking time will be increased due to loss of heat. Remove cover only when necessary to stir or add ingredients. Always lift cover slowly, directing steam away from you.
- After food is cooked, set to lowest setting for serving or turn control to OFF position.
- Unplug cord from electric outlet after use and allow the crockery cooker to cool before cleaning.
- Do not allow children to use the crockery cooker or be around the crockery cooker, as the outside surfaces of the crockery cooker are hot during use.
- Use only plastic, rubber, wooden or non-metal cooking tools with ceramic pot. Use of metal cooking tools may scratch the ceramic pot.
- Stir foods occasionally to reduce sticking to sides of ceramic pot.
- Foods will be brought to a simmer at all cooking settings. The setting determines the time needed to reach a simmer.
- If the ceramic pot is filled less than half full, suggested cooking times should be reduced.
- Less tender, less expensive cuts of meat are better suited to slow cooking than expensive cuts of meat. Remove excess fat from meat when possible before cooking. Remove skin from poultry, if desired, before cooking.
- Raw vegetables take longer to cook than meats as the liquid simmers rather than boils. Cut vegetables into uniform, bite-size pieces to cook evenly.

- You may fill the ceramic pot with food the night before cooking and refrigerate. When ready, place ceramic pot into the heating base and cook. The gradual warming will not harm the ceramic pot.
- Insert a meat thermometer into roast, hams or whole chickens to ensure meats are cooked to recommended temperature. Fresh or thawed fish and seafood fall apart during long hours of cooking. Add these ingredients an hour before serving.
- Milk, sour cream and natural cheese break down during long hours of cooking. Add these ingredients just before serving or substitute with undiluted condensed creamed canned soups or evaporated milk. Processed cheese tends to give better results than naturally aged cheese.
- Rice and pasta may be added uncooked during the last hour of cooking time. If added uncooked, make sure there are at least two cups of liquid in the cooking pot. Stir occasionally to prevent sticking.

#### **Cleaning Your Crockery Cooker**

1. Allow the entire unit (base, ceramic pot and cover) to cool before cleaning. Set ceramic pot and cover on dry, heat-protective surface for gradual cooling.
  2. Wipe heating base and cord with a damp cloth after it has been unplugged and the base is cool.
  3. Ceramic pot and cover may be washed using hot soapy water by hand or cleaned in the dishwasher. Avoid contact between pieces to prevent damage.
- Do not run cold water over hot ceramic pot or cover, as they may crack if cooled suddenly.
  - Do not immerse heating base, cord, plugs or other electric parts in water or other liquid.
  - Use a non-abrasive cleanser or baking soda paste to remove stains. Do not use metal scouring pads or cleansers. Wipe with distilled vinegar to remove water spots or mineral deposits. Rewash with hot soapy water, rinse and dry.

### Recipes

Many of your favorite recipes may be adapted to the West Bend® Housewares Crockery Cooker. To do so, use the following guide.

<u>If your recipe says to cook for...</u>	<u>Cook at LO for...</u>	<u>Cook at HI for...</u>
30 minutes	6 to 8 hours	3 to 4 hours
35 to 60 minutes	8 to 10 hours	5 to 6 hours
1 to 3 hours	10 to 12 hours	7 to 8 hours

Try some of our favorite recipes using the West Bend® Housewares, LLC Crockery Cooker that we have included on the following pages to get you started.

Chicken Vegetable Stew	
2-2 1/2 lbs	chicken parts - skinned if desired
5	carrots - cut into 1/2-inch pieces
3	ribs celery - cut into 1/2-inch pieces
1	7 ounce can mushroom stems and pieces - undrained
1	15 ounce jar whole small onions - undrained - OR 1 medium onion, chopped
1	16 ounce bag frozen peas - rinsed with hot water
1 tsp	salt
3/4 tsp	dried thyme leaves
3/4 tsp	paprika
1/2 tsp	rubbed sage
1/2 tsp	pepper
1 1/2 cups	water
1	6 ounce can tomato paste
2	10.5 ounce cans chicken broth
4 tbsp	cornstarch
1/3 cup	water

Cooking Time: LO = 8 to 10 hours HI = 5 to 6 hours

1. Place chicken parts, carrots, celery, mushrooms, onions and peas in ceramic cooking pot. In medium bowl combine salt, thyme, paprika, sage, pepper, water, tomato paste and broth. Pour over chicken mixture.
2. Place ceramic pot into heating base, cover and cook at desired heat setting for time given or until chicken and vegetables are tender.
3. Remove chicken pieces and set aside to cool slightly. Remove meat from bones and cut into bite-size pieces. Return meat to cooking pot; stir to combine.
4. Set control to HI. Combine cornstarch and water; stir slowly into stew until thickened. Serves 6 to 8. Set at LO for serving if desired.

WB 002397

**Highly Confidential**  
**Attorneys' Eyes Only**

Slow Cooker Stew		
2-2 1/2	lbs	beef stew meat, cut into 1-inch pieces
1		medium onion – chopped
6		carrots – cut into 1/2-inch pieces
4		ribs celery – cut into 1/2-inch pieces
5		medium potatoes – cut into 1/2-inch pieces
1		28 ounce can whole tomatoes – undrained – cut up
2		10.5 ounce cans beef broth
1 1/2	tbsp	worcestershire sauce
2	tbsp	dried parsley flakes
2		bay leaves
1 1/2	tsp	salt
1/2	tsp	pepper
3	tbsp	quick cooking tapioca

Cooking Time: LO = 8 to 10 hours HI = 5 to 6 hours

1. Combine all ingredients in ceramic cooking pot; stir to blend.
2. Place ceramic pot into the heating base, cover and cook at desired heat setting for time given or until meat and vegetables are tender. Remove bay leaves before serving. Serves 6 to 8. Set at LO for serving if desired.

Chili		
2	lbs	lean ground beef or turkey
1 1/2	cups	chopped onion
1 1/2	cups	chopped green pepper
2		garlic cloves - minced
3		28 ounce cans whole tomatoes – undrained – cut up
1		15 ounce can kidney beans - undrained
2 1/2	tbsp	chili powder
1 1/2	tsp	ground cumin
1 1/2	tsp	salt
3/4	tsp	pepper

Cooking Time: LO = 8 to 10 hours HI = 4 to 5 hours

1. Brown ground beef or turkey with onion, green pepper and garlic in skillet over medium heat of range unit. Remove excess grease. Transfer mixture into ceramic pot. Add remaining ingredients; stir to blend.
2. Place ceramic pot into heating base, cover and cook at desired heat setting for time given. Serves 6 to 8. Set at LO for serving, if desired.

WB 002398

Highly Confidential  
Attorneys' Eyes Only

Hearty Chicken Noodle Soup		
2-2 1/2	lbs	chicken parts, skinned if desired
6	cups	water
1		medium onion - chopped
6		carrots - cut into 1/2-inch pieces
5		ribs of celery - cut into 1/2-inch pieces
1		14.5 ounce can whole tomatoes - undrained - cut up
1 1/2	tblsp	instant chicken bouillon
1	tblsp	dried parsley flakes
1	tsp	salt
1/2	tsp	dried rosemary leaves
1/2	tsp	pepper
1	cup	uncooked fine egg noodles

**Cooking Time:** LO = 8 to 10 hours HI = 5 to 6 hours

1. Combine all ingredients, except egg noodles in the ceramic pot. Place cooking pot into heating base, cover and cook at desired heat setting for time given or until chicken and vegetables are tender.
2. Remove chicken pieces from ceramic pot and set aside to cool slightly. Set control to HI and add noodles, stirring to combine. Cover and continue to cook 30 minutes.
3. Remove chicken from bones and cut into bite-size pieces. Return meat to cooking pot and cook until noodles are tender. Serves 6 to 8. Set at LO for serving, if desired.

Corned Beef and Cabbage		
3 - 4	lbs	corned beef brisket
1		medium onion - sliced
1/2	tsp	celery seed
1/2	tsp	mustard seed
1		clove garlic - minced
1		bay leaf
1		small head cabbage - cut into wedges
		water

**Cooking Time:** LO = 8 to 10 hours

1. Place brisket with liquid and spices from package into ceramic cooking pot. Add onion, celery seed, mustard seed, garlic and bay leaf. Add just enough water to cover brisket. Cover and cook at LO for 8 to 10 hours or until brisket is fork tender.
2. During last hour of cooking, add cabbage wedges and continue cooking at LO. Discard cooking liquid and spices. Serves 6.

WB 002399

**Highly Confidential  
Attorneys' Eyes Only**

Minestrone Soup	
3 cups	water
2	10.5 ounce cans chicken broth
1	medium onion - chopped
3	carrots - diced
1	medium zucchini, halved and cut into $\frac{1}{2}$ -inch slices
1 $\frac{1}{2}$ cups	cabbage - chopped
1	15 ounce can garbanzo beans - undrained
3	14.5 ounce cans whole tomatoes - undrained - cut-up
5	slices bacon - cooked & crumbled - optional
2	garlic cloves - minced
1 $\frac{1}{2}$ tsp	Italian seasoning
1 tsp	salt
$\frac{1}{2}$ tsp	pepper
$\frac{3}{4}$ cup	small elbow macaroni or other pasta - uncooked

Cooking Time: LO = 8 to 10 hours HI = 5 to 6 hours

1. Combine all ingredients, except macaroni in the ceramic pot; stir to blend. Place cooking pot into heating base, cover and cook at desired heat setting for time given or until vegetables are tender.
2. Increase heat to HI setting and add macaroni; stir to blend. Cover and cook for 30 minutes. Serves 6 to 8. Set at LO for serving, if desired.

Company Chicken	
3 - 4 lbs	chicken parts, skinned if desired
	salt and pepper to taste
2	10.5 ounce cans condensed cream of mushroom soup
2	10.5 ounce cans condensed tomato soup
$\frac{1}{4}$ cup	flour
2	cloves garlic - minced
1	16 ounce jar small whole onions - drained, OR 1 large onion - sliced and separated into rings

Cooking Time: LO = 8 to 10 hours HI = 5 to 6 hours

1. Season chicken parts with salt and pepper and place into ceramic cooking pot. In bowl, combine remaining ingredients, stirring well to blend. Pour over chicken.
2. Cover and cook at desired heat setting for time given or until chicken is tender. Serves 6 to 8. Set at LO for serving, if desired.

WB 002400

Highly Confidential  
Attorneys' Eyes Only

Herbed Pork Roast	
4	large garlic cloves – quartered
5 lbs	pork roast – boneless or bone-in
1 tsp	salt
1 tsp	ground thyme
$\frac{1}{2}$ tsp	rubbed sage
$\frac{1}{2}$ tsp	ground cloves
1 tsp	grated lemon peel
$\frac{1}{2}$ cup	water
3 tbsps	cornstarch - optional
3 tbsps	water - optional

Cooking Time: LO = 9 to 10 hours HI = 5 to 6 hours

1. Cut 16 small pockets into roast and insert garlic pieces. In small bowl combine salt, thyme, sage, cloves and lemon peel. Rub on pork roast.
2. Pour  $\frac{1}{2}$  cup water into the ceramic cooking pot. Add roast. Place pot into heating base, cover and cook at desired heat setting for time given or until meat thermometer inserted into center of roast reads 170°F or higher.
3. Allow roast to stand 10 to 15 minutes before carving. Remove garlic pieces. Juices may be thickened for gravy if desired. Dissolve cornstarch in water. Set control to HI. Stir slowly into juices until thickened. Serves 6 to 8.

Beef Roast with Vegetables	
3-3 $\frac{1}{2}$ lbs	beef roast
	salt and pepper to taste
1	large onion – quartered or sliced
6	carrots – cut into 1-inch pieces
6	medium potatoes – quartered and halved
$\frac{1}{2}$ cup	water

Cooking Time: LO = 9 to 10 hours HI = 5 to 6 hours

1. If desired, brown roast in skillet over medium heat of range unit before placing into ceramic cooking pot. Season as desired. Place vegetables around roast. Add water.
2. Place ceramic pot into heating base, cover and cook at desired heat setting for time given or until meat and vegetables are tender. (Meat thermometer should read 170°F for well done). Thicken juices with mixture of 2 tablespoons cornstarch and 2 tablespoons water if desired. Set control to HI and slowly stir mixture into juices until thickened. Serves 6. Set at LO for serving, if desired.

WB 002401

Highly Confidential  
Attorneys' Eyes Only

## Product Warranty

### Appliance 1 Year Limited Warranty

West Bend® Housewares, LLC warrants this appliance from failures in the material and workmanship for 1 year from the date of original purchase, provided the appliance is operated and maintained in conformity with the West Bend® Housewares, LLC Instruction Manual. Any failed part of the appliance will be repaired or replaced without charge at West Bend® Housewares, LLC discretion. This warranty applies to indoor household use only.

The West Bend® Housewares, LLC warranty does not cover any damage, including discoloration, to any non-stick surface of the appliance. The West Bend® Housewares, LLC warranty is null and void, as determined solely by West Bend® Housewares, LLC, if the appliance is damaged through accident, misuse or abuse, scratching, overheating, or if the appliance is altered in any way or if used outside of an indoor household setting.

This warranty gives you specific legal rights. You may also have other rights, which may vary from state to state.

THIS WARRANTY IS IN LIEU OF ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, PERFORMANCE, OR OTHERWISE, WHICH ARE HEREBY EXCLUDED. IN NO EVENT SHALL WEST BEND® HOUSEWARES, LLC BE LIABLE FOR ANY DAMAGES, WHETHER DIRECT, IMMEDIATE, INCIDENTAL, FORESEEABLE, CONSEQUENTIAL, OR SPECIAL, ARISING OUT OF OR IN CONNECTION WITH ITS APPLIANCE.

If you think the appliance has failed or requires service within its warranty period, return it to the original place of purchase. For further details please contact the West Bend® Housewares Customer Service Department at (262) 334-6949 or e-mail us at [housewares@westbend.com](mailto:housewares@westbend.com). Return shipping fees are non-refundable. Hand-written receipts are not accepted.

Valid only in USA and Canada

### Replacement Parts

Replacement parts may be ordered direct from West Bend® Housewares, LLC by ordering online at [www.westbend.com](http://www.westbend.com): Replacement Parts. Or you may call or e-mail the service department at the number/e-mail address listed above, or by writing to us at:

West Bend Housewares, LLC  
Attn: Customer Service  
P.O. Box 2780  
West Bend, WI 53095



Be sure to include the catalog/model number of your appliance (located on the bottom/back of the unit) and a description and quantity of the part you wish to order. Along with this include your name, mailing address, Visa/MasterCard number, expiration date and the name as it appears on the card. Checks can be made payable to West Bend Housewares, LLC. Call Customer Service to obtain purchase amount. Your state's sales tax and a shipping/processing fee will be added to your total charge. Please allow two (2) weeks for delivery.

This manual contains important and helpful information regarding the safe use and care of your new West Bend® Housewares, LLC product. For future reference, attach dated sales receipt for warranty proof of purchase and record the following information:

Date purchased or received as gift: \_\_\_\_\_

Where purchased and price, if known: \_\_\_\_\_

Item Number and Date Code (shown bottom/back of product): \_\_\_\_\_

WB 002402

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent  
No. 6,573,483

WB 002403

Highly Confidential  
Attorneys' Eyes Only



US 6,573,483 B1

(12) **United States Patent**  
DeCobert et al.

(10) Patent No.: **US 6,573,483 B1**  
(45) Date of Patent: **Jun. 3, 2003**

(54) **PROGRAMMABLE SLOW-COOKER APPLIANCE**

(75) Inventors: James F. DeCobert, Attleboro, MA  
(US); Loren G. Hlava, Clinton, MO  
(US); Charles T. Thrasher, Jr.,  
Clinton, MA (US)

(73) Assignee: The Holmes Group, Inc., Milford, MA  
(US)

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(h) by 0 days.

(21) Appl. No.: 09/862,174

(22) Filed: Mar. 8, 2001

#### Related U.S. Application Data

(60) Provisional application No. 60/189,443, filed on Mar. 15,  
2000, and provisional application No. 60/196,273, filed on  
Apr. 5, 2000.

(51) Int. Cl.<sup>7</sup> H05B 1/02

(52) U.S. Cl. 219/506; 219/494; 219/497;  
219/435; 219/432; 99/340

(58) Field of Search 219/433, 432,  
219/435, 506, 494, 518; 99/340

(56) References Cited

#### U.S. PATENT DOCUMENTS

3,681,665 A 8/1972 Athert  
3,904,852 A 9/1975 Rivelli et al. 219/442  
4,313,051 A 1/1982 Aoshima  
4,345,145 A 8/1982 Norwood  
4,535,386 A 3/1985 Frey, Jr. et al.  
4,551,590 A 11/1985 Mahon  
4,566,802 A 1/1986 Kuehler  
4,668,878 A 5/1987 Wysz  
4,674,800 A 6/1987 Kojima et al.

4,685,683 A 9/1987 Wingler et al.  
4,685,710 A 9/1987 Yamashita et al.  
4,742,554 A 5/1988 Drell et al.  
4,749,874 A 6/1988 Meisner  
4,764,715 A 8/1988 Kowalewski et al.  
4,789,761 A 12/1988 Malone et al.  
4,835,349 A 5/1989 Weber  
4,841,496 A 6/1989 Adams et al.  
4,857,758 A 8/1989 Rizzio et al.  
4,959,572 A 9/1990 Cole et al.  
5,191,231 A 3/1993 Berry  
5,400,598 A 7/1995 Rodolfo et al.  
5,477,029 A 12/1995 Skutt et al.  
5,539,185 A 7/1996 Fokker  
5,596,552 A 1/1997 Lim  
5,615,604 A 4/1997 Chenglin  
5,734,149 A 3/1998 Skutt et al.  
5,771,207 A 6/1998 Murof et al.  
5,834,718 A 11/1998 Amosett  
5,910,265 A 6/1999 Baker et al. 219/454  
6,101,393 B1 2/2001 Park  
6,196,113 B1 3/2001 Yung 99/327  
6,229,507 B1 5/2001 Nakamura et al.  
6,274,847 B1 8/2001 Hlava et al. 219/433

#### FOREIGN PATENT DOCUMENTS

GB 2061091 5/1961 219/433

\* cited by examiner

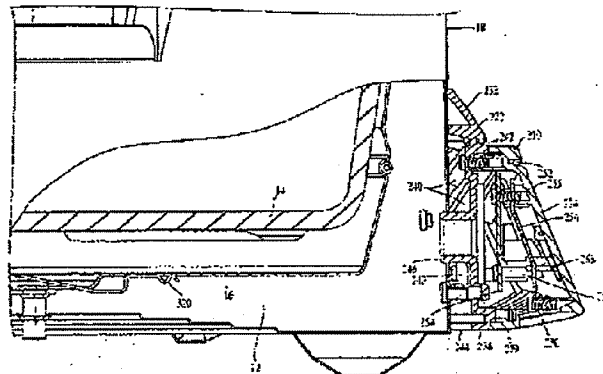
Primary Examiner—Mark Paschall

(74) Attorney, Agent, or Firm—Brinks Hofer Gilson &  
Lione

(57) **ABSTRACT**

A programmable slow-cooker appliance, in which a user sets  
a time and temperature for cooking a food item. A program-  
mable controller prevents the unit from being used solely as  
a "keep warm" appliance, and a unique design allows  
cooling of the controller during cooking.

19 Claims, 12 Drawing Sheets



WB 002404

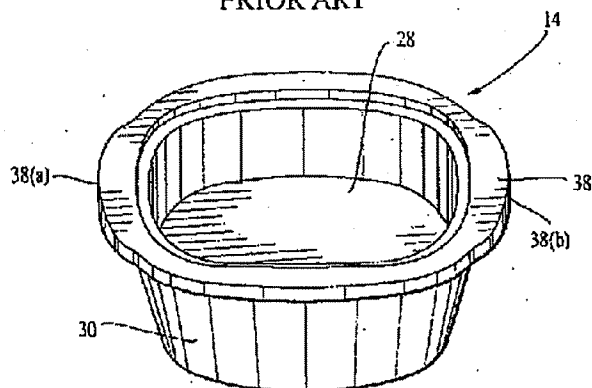
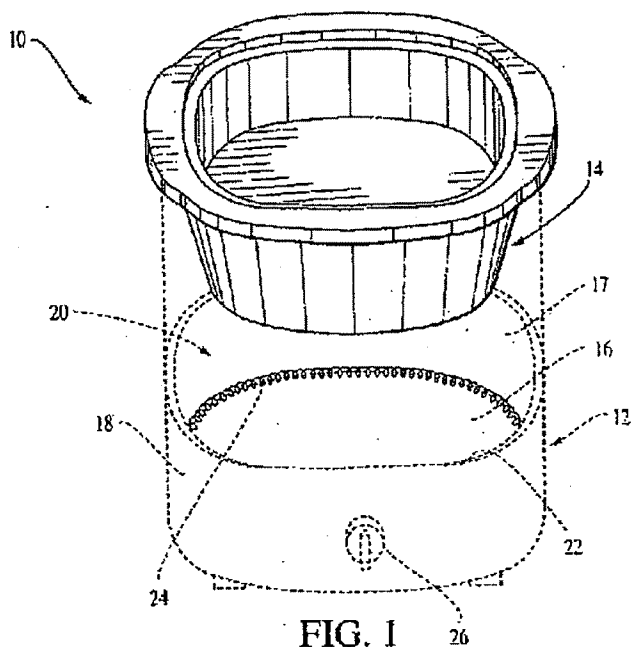
Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jun. 3, 2003

Sheet 1 of 12

US 6,573,483 B1



WB 002405

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jan. 3, 2003

Sheet 2 of 12

US 6,573,483 B1

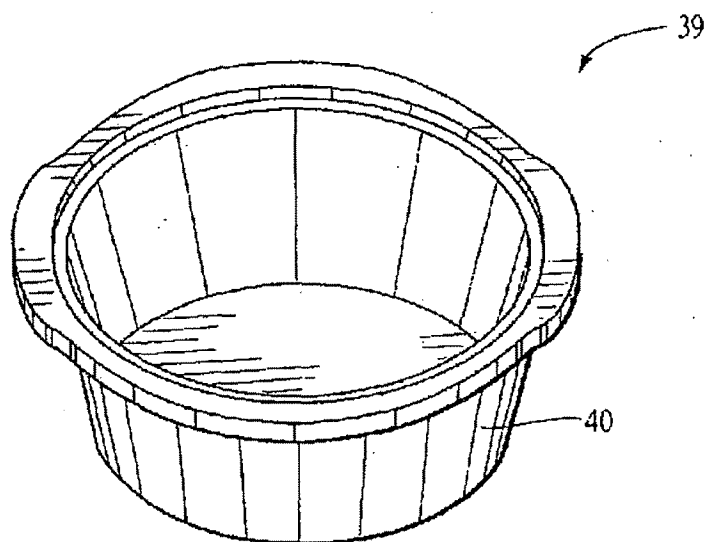


FIG. 3  
PRIOR ART

WB 002406

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jan. 3, 2003

Sheet 3 of 12

US 6,573,483 B1

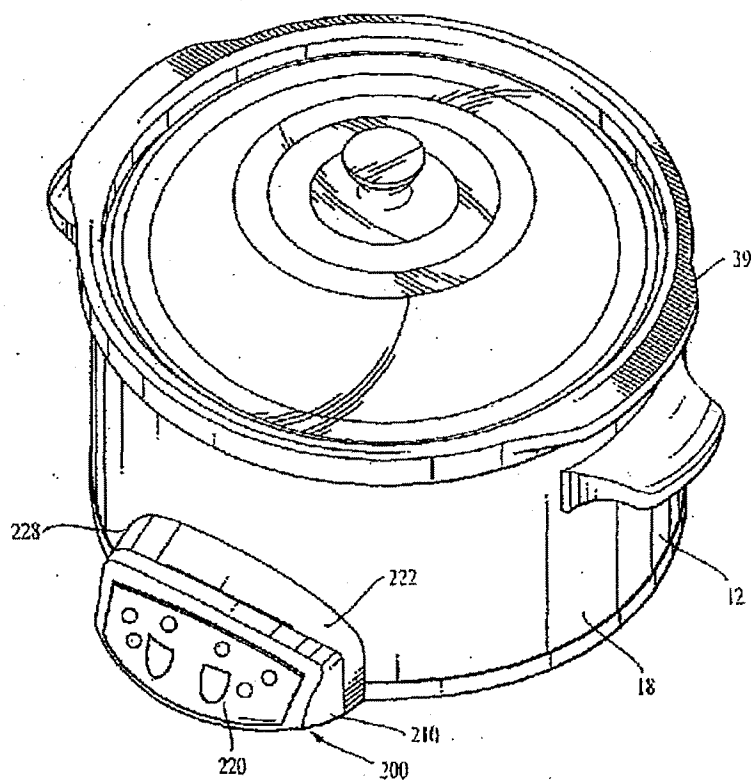


FIG. 4

WB 002407

Highly Confidential  
Attorneys' Eyes Only

US 6,573,483 B1

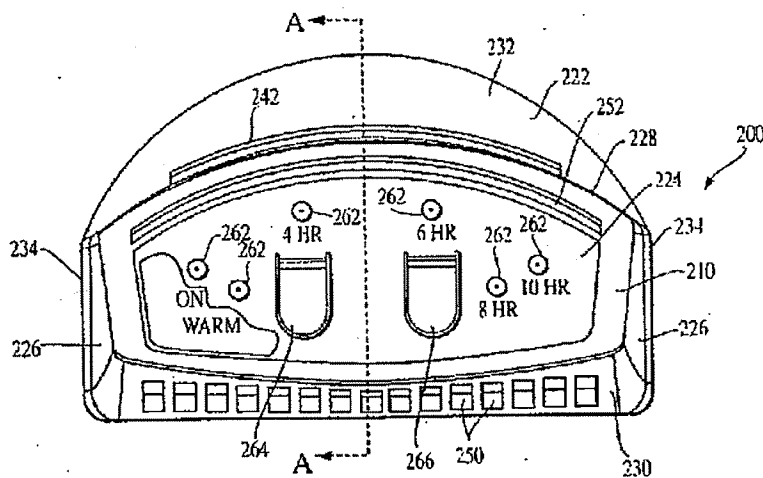


FIG. 5

WB 002498

**Highly Confidential  
Attorneys' Eyes Only**

U.S. Patent

Jun. 3, 2003

Sheet 5 of 12

US 6,573,483 B1

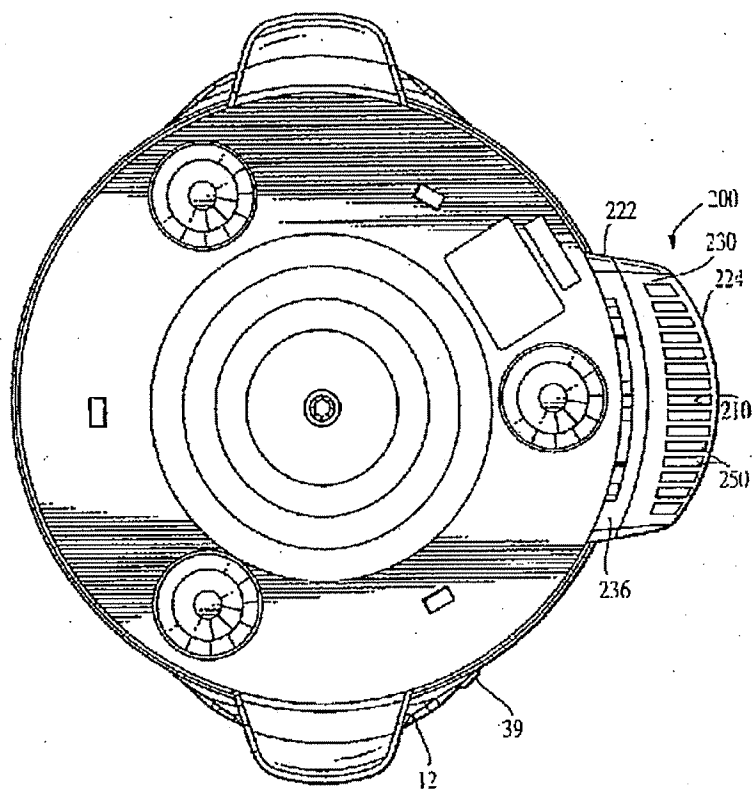


FIG. 6

WB 002409

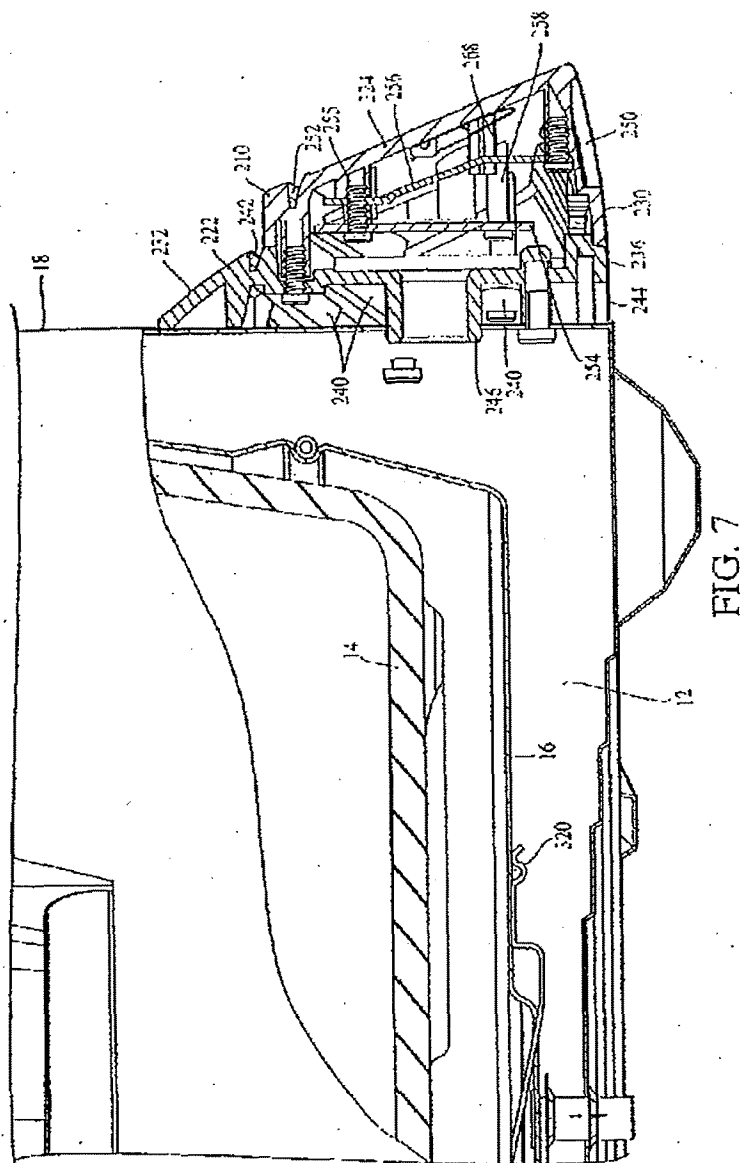
Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jun. 3, 2003

Sheet 6 of 12

US 6,573,483 B1



WB 002410

Highly Confidential  
Attorneys' Eyes Only

**U.S. Patent**

Jun. 3, 2003

Sheet 7 of 12

US 6,573,483 B1

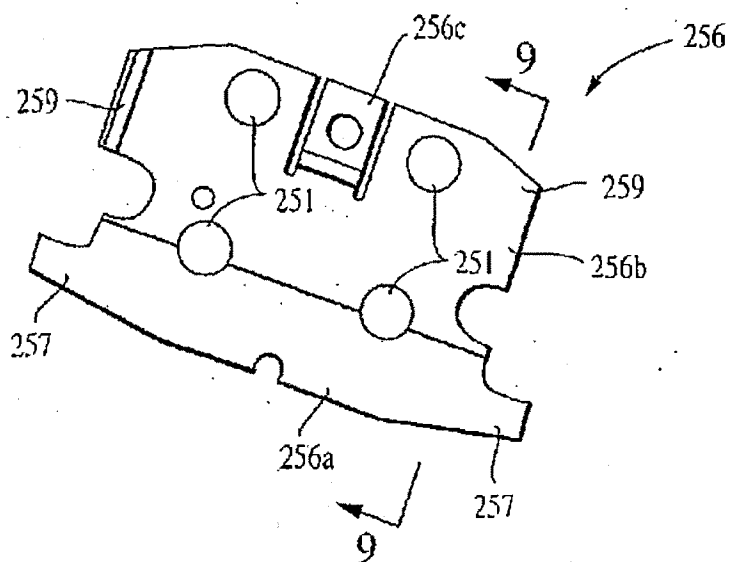


FIG. 8

WB 002411

**Highly Confidential  
Attorneys' Eyes Only**

U.S. Patent

Jun. 3, 2003

Sheet 8 of 12

US 6,573,483 B1

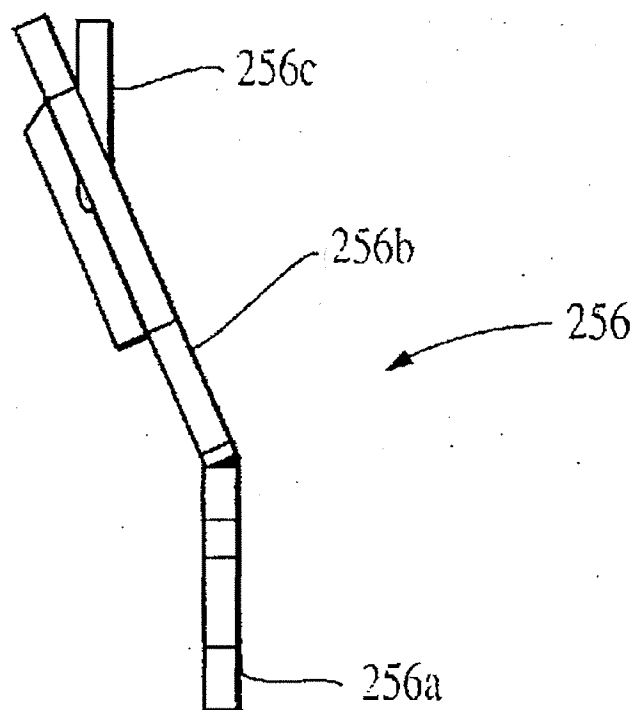


FIG. 9

WB 002412

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jun. 3, 2003

Sheet 9 of 12

US 6,573,483 B1

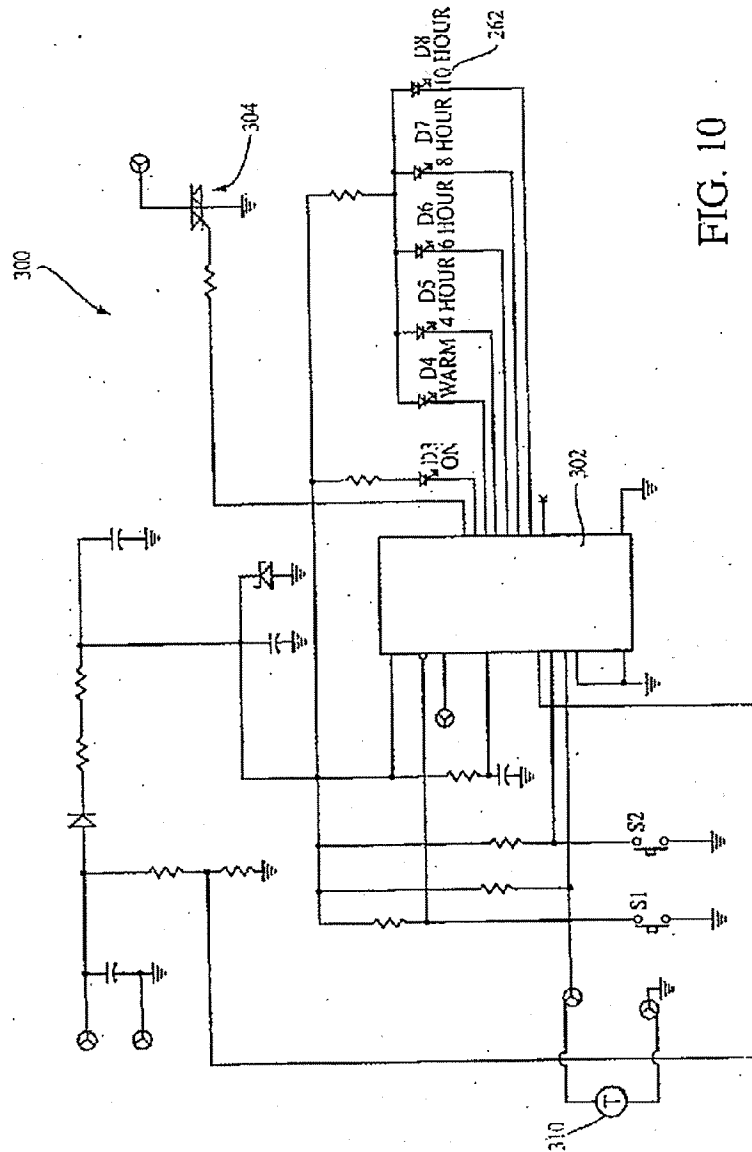


FIG. 10

WB 002413

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jun. 3, 2003

Sheet 10 of 12

US 6,573,483 B1

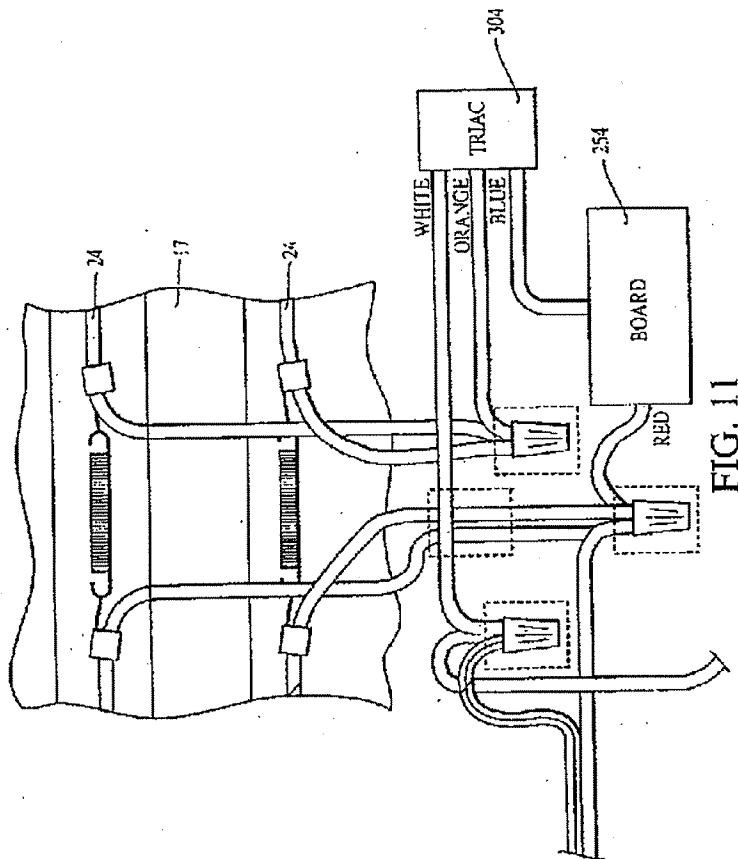


FIG. 11

WB 002414

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jun. 3, 2003

Sheet 11 of 12

US 6,573,483 B1

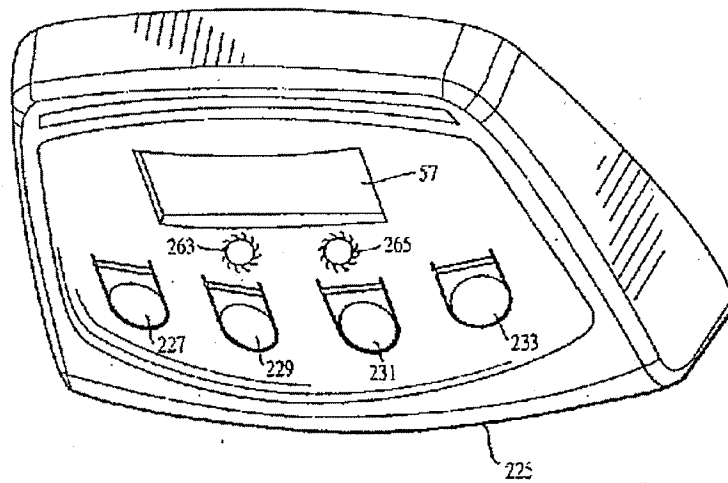


FIG. 12

WB 002415

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jun. 3, 2003

Sheet 12 of 12

US 6,573,483 B1

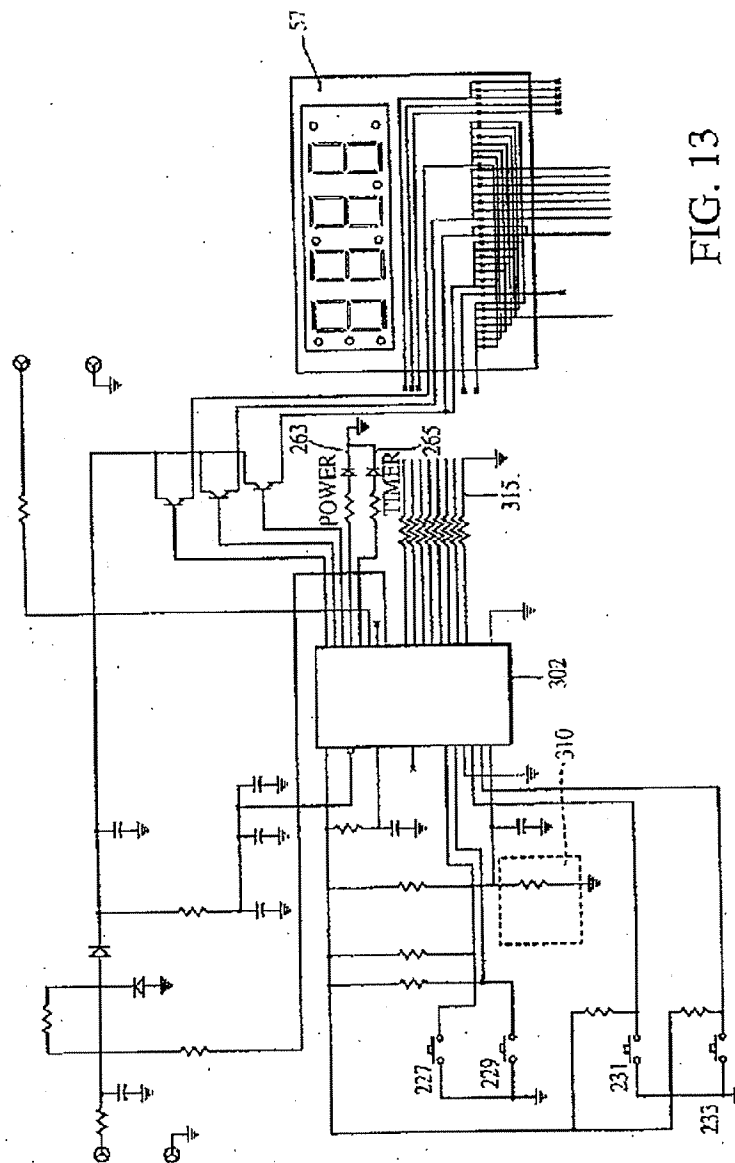


FIG. 13

WB 002416

Highly Confidential  
Attorneys' Eyes Only

US 6,573,483 B1

# 1 PROGRAMMABLE SLOW-COOKER APPLIANCE

This application claims priority to Provisional Application No. 60/189,443, filed Mar. 15, 2003, and to Provisional Application No. 60/196,273, filed Apr. 5, 2000.

## BACKGROUND OF THE INVENTION

Time and convenience are in short supply for homemakers wishing to supply a home-cooked meal to family members. Some appliances, such as slow-cooker appliances, attempt to meet this need by providing all-day cooking while a homemaker is absent. Such appliances, however, tend to be of the type where only one temperature and all day cooking is possible, regardless of the food item, and thus potentially subjecting the food item to over- or under-cooking. Another option may be to use a cooking unit with a controller, where a user may set a time or temperature desired. These units, however, tend to be quite a bit larger and more expensive than slow-cooker appliances. If these units are of more reasonable size, they also suffer because the controller inevitably must be placed near the heating element.

What is needed is a cooking appliance in which the user retains control over the time and temperature of cooking, but which is small enough to be convenient. What is needed is a slow-cooker unit in which the controller does not become overheated and damaged by the heating element.

## SUMMARY OF THE INVENTION

One embodiment of the invention is a programmable slow-cooker appliance, including a heating unit, which includes upstanding sidewalls and a bottom wall. The sidewalls and bottom encompass a heating area. The appliance includes a heating element mounted on the inner surface of the interior wall of the heating unit. In one embodiment, the cooking area may also encompass a cooking unit inside the heating unit, suitable for holding food to be cooked. The appliance includes a programmable controller mounted on its outside, and preferably mounted via a controller housing, which acts to insulate the controller from the heat of the appliance, preferably via a unique system of a heat sink and ventilation. The housing, on the side of the slow-cooker appliance, utilizes ventilation holes on its bottom and top to encourage a chimney effect, in which cool air from the surroundings is drawn into ventilation slots or holes at the bottom of the housing. This air cools the controller, and the air is then expelled from ventilation holes on the top of the housing, convecting heat away from the controller.

Another aspect of the invention is a method of using the programmable controller to ensure that food is cooked according to the desires of a user. The user provides a food item and places the food item into the slow-cooker appliance, as described above. The user sets a cooking time and temperature for the programmable slow-cooker unit, using the controls to set both the time and the temperature. The cooking time according to one embodiment may not be set less than four hours, and the temperature may not be set for less than 150 degrees Fahrenheit (66 degrees Celsius). This prevents a user from accidentally setting the cooker to a "warm" temperature, in which food would only be warmed but not cooked thoroughly before consumption. In one embodiment, if the user sets no time or temperature, but merely turns the cooker on, the cooker defaults to a particular time and temperature, set by the user or the factory, such as a default setting of four hours and 175 degrees Fahrenheit or eight hours and 150 degrees Fahrenheit.

# 2 BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an embodiment of a prior art slow-cooker appliance having an oval shape that may be utilized in the present invention;

FIG. 2 is a perspective view of a prior art embodiment of a cooking unit 14 which may be utilized with the appliance of FIG. 1;

FIG. 3 is a perspective view of a prior art cooking unit 39 similar to that shown in FIG. 2, but having a circular shape;

FIG. 4 is a perspective view of a slow cooker appliance incorporating the present invention;

FIG. 5 is a detailed plan view of a portion of the control 200 of the embodiment of FIG. 4;

FIG. 6 is a bottom plan view of the embodiment of FIG. 4;

FIG. 7 is a side cutaway view of the embodiment of FIG. 4;

FIG. 8 is a plan view of a heat sink 256 as utilized in the embodiment of FIG. 4;

FIG. 9 is a side view taken along a line 9-9 of FIG. 8;

FIGS. 10 and 13 are schematic circuit diagrams showing the circuitry and components implemented in preferred embodiments;

FIG. 11 is a wiring diagram showing some of the electric componentry of the preferred embodiment; and

FIG. 12 is an embodiment of the front panel.

## DETAILED DESCRIPTION OF THE DRAWINGS AND PREFERRED EMBODIMENTS

Referring to FIG. 1, one prior art embodiment of a food-heating slow-cooker appliance 10 is shown. The appliance 10 preferably comprises a heating unit 12 and a cooking unit 14. An exemplary slow cooker appliance 10 may be a Crock-Pot® Slow Cooker made by The Rival Division of The Holmes Group® of Milford, Mass. The heating unit 12 preferably has a bottom 16 and a continuous outer sidewall 18. The bottom 16 and an interior sidewall 17 define a well-like heating chamber 20 having an oval cross-section, and the interior sidewall 17 defines an annular lip 22 at an upper edge of the outer sidewall 18 and the interior sidewall 17. The heating chamber 20 has a heating element 24 disposed therein and mounted in the heating unit 12, either under the bottom 16 or additionally between the outer sidewall 18 and the interior sidewall 17. A control switch 26 is conventionally used to provide electricity to the heating element 24. The heating element 24 functions to heat the cooking unit 14 via the heating chamber 20.

As shown in FIG. 2, the cooking unit 14 has a bottom 28 with preferably a continuous sidewall 30 upstanding therefrom. The continuous sidewall 30 preferably has an annular lip 38 projecting in flange-like fashion from the upper end thereof and a substantially oval cross-section. The cooking unit 14 is adapted to be at least partially received within the heating unit 12 with the annular lip 38 of the cooking unit 14 preferably engaging the annular lip 22 of the heating unit 12, supporting the cooking unit 14 within the heating unit 12. Preferably, the annular lip 38 further defines a pair of handle portions 38(a) and 38(b) to facilitate lifting the cooking unit 14. The cooking unit 14 is preferably made of ceramic with a coating of conventional glazing compound.

The thermal and heat retaining properties of the ceramic cooking unit 14 allow it to conduct heat from the heating chamber 20 through the sidewall 30. This provides even heating throughout the unit 14.

WB 002417

Highly Confidential  
Attorneys' Eyes Only

US 6,573,483 B1

3

As shown in FIG. 3, an alternative embodiment of the appliance 10 includes a cooking unit 39 having a sidewall 40 and a substantially circular cross-section. This embodiment is preferably adapted to fit within a heating unit having a complementary circular heating chamber. This cooking unit 39 is used in an embodiment of the present invention shown in FIG. 4.

In use, the heating unit 12 is provided with a first cooking unit 39. The heating element 24 (not shown) may be powered on and off as necessary to supply heat at a maintained temperature to the cooking unit 39 and the heating chamber via a programmable control 200. The control 200 preferably includes a circuit board housing 210, a control panel 220, and an insulation shield 222 assembled together for attachment to the outer sidewall 18 of the heating unit 12. The interior of the housing 210 contains a printed circuit board 254 (shown in FIG. 7) containing electronic components of the control.

As shown in FIGS. 5 and 6, the housing 210 preferably includes a control panel user interface 224 located on an inclined front surface of the housing 210. Preferably, the housing 210 and insulation shield 222 are made from a thermoplastic material such as polypropylene. A pair of side walls 226, a top wall 228, and bottom wall 230 are preferably located adjacent the control panel 224 and support the control panel 224 in an inclined position away from the front of the cooking appliance 10. This gives the user access to the control panel 224, and also locates the controls and componentry within the housing 210 away from a significant amount of the heat generated by the appliance 10. The printed circuit board 254 may be mounted via threaded screws 255 to rearwardly projecting screw receiving portions 258 on the rear side of the housing 210.

The control panel 224 includes a plurality of indicator lights, such as LEDs 262, spaced on the front panel 224. As is well-known in the art, a variety of other indicator devices may be provided, including digital readouts, audible alarms, liquid crystal displays, incandescent lamps or fluorescent readouts. Preferably, the control panel 224 also includes a plurality of cantilevered portions 264 and 266 as shown in FIG. 5. The cantilevered portions 264, 266 preferably include rearwardly projecting fingers 268 (shown in FIG. 7) which translate the depression of the portions 264, 266 toward the rear portion of the housing 210. The fingers 268 are preferably used to depress pushbutton switch portions located on the circuit board 254. A water-impermeable label membrane may be applied over the front of the control panel 224 to label the indicators 262 and cantilevered portions 264 and 266 for the user. The membrane may also protect the front control panel 224 from damage from spilled foods or liquids and facilitate cleaning.

To further protect the electronic componentry within the housing 210 from the heat generated by the appliance 10, the annular shield member 222 is preferably sized for interposition between the heating unit 12 and the housing 210. In particular, as shown in FIGS. 5 and 6, the shield 222 includes a top wall 232, a pair of side walls 234, and a bottom wall 236. The shield 222 acts as a ventilated spacer to hold the electronic components and the housing 210 at a distance away from sidewall of the cooking unit 12.

In order to dissipate heat that may otherwise be retained between the cooking unit 12 and the rear of the housing 210, an air circulation space is provided within the shield. In particular, as shown in the side cutaway view of FIG. 7, the air space 240 behind the shield 222 may vent warmer air out through an upper elongated slot 242 defined within the top

4

wall 232 of the shield 222. Likewise, an elongated slot 244 is defined into the air space 240 in the bottom wall 236 of the shield 222. Heated air may thus escape through the top elongated slot 242 and cooler air may enter the air space 240 through the bottom elongated slot 244. As shown in FIG. 7, the shield 222 also preferably defines a rearwardly projecting cylindrical flange 246 that extends into the outer wall 18 to allow passage of control and power wiring between the interior of the heating unit 12 and the interior of the housing 210.

In a similar fashion, air circulation is promoted through the housing 210 through a set of openings, preferably defined between the upper portion and the bottom of the housing 210. In particular, a plurality of openings 250 are defined within the bottom wall 230 of the housing 210. An elongated upper slot 252 is provided on the front face 224 of the housing 210. This allows air to freely circulate behind the control panel 224 and assist in the dissipation of heat from the circuit board 254 and its electronic componentry within the housing 210. Preferably, a heat sink 256 is provided as shown in FIG. 7 and positioned between the circuit board 254 and the front panel 224 inside the housing 210. The sink 256 preferably includes a plurality of openings defined therein to allow air to circulate between the openings 258 and 252 and through and around the heat sink 256 to dissipate additional heat therefrom. Also shown is the relative position of cooking unit 14.

FIGS. 8 and 9 show a detailed view of the heat sink 256. Preferably, the heat sink is machined from 0.063 inch thick 3003-O anodized aluminum. The heat sink 256 is preferably bent at a 160 degree angle between a bottom flange portion 256a and an upper portion 256b. A centrally located retaining tab portion 256c is bent parallel with the lower portion 256a, and the portions 256a and 256c are used for attachment of the heat sink 256 to the rear side of the housing 210 interior via the rearwardly projecting screw receiving portions 258. To maximize the dissipation of heat, a plurality of winged sections 257 and 259 are provided on the heat sink 256 and extend outwardly from a center portion 256a of the heat sink 256. A plurality of openings are defined through the heat sink 256 to allow the fingers 268 of the control panel cantilevered portions 264, 266 to project through the heat sink and contact the circuit board 254 at the rear of the housing 210. The openings 251 also facilitate cooling air flow through and past the heat sink 256 to further dissipate heat therefrom.

The circuit board 254 mounts circuitry and logic allowing the user of the appliance 10 to electronically control and program cooking cycles and temperature. A schematic diagram of the electronic circuitry and components is shown in FIG. 10. The diagram shows a preferred exemplary circuit incorporating preferred components as utilized in the preferred embodiment of the present invention. One skilled in the art will recognize that the componentry illustrated herein is exemplary only and that many other components may be substituted to achieve the functions described herein. FIG. 10 includes labels for each of the components of the circuit, and only major components will be described herein.

First, as shown in the diagram, the preferred circuit 300 is preferably built around an EPROM/ROM-based CMOS microprocessor controller 302, such as the PIC16CR54C RISC CPU manufactured by Microchip Technology, Inc. The chip output preferably includes circuit drivers for 6 LED indicators 262 (labeled D3-D8) as shown. These LED indicators may be assigned labels as follows:

WB 002418

Highly Confidential  
Attorneys' Eyes Only

US 6,573,483 B1

5

LED	Indicates
D3	On
D4	WARM
D5	4 HOUR
D6	6 HOUR
D7	8 HOUR
D8	10 HOUR

Two momentary pushbutton contact switches S1 and S2 are used to trigger the "Off" and "Cook" features, respectively, as will be described in the cooking procedure below. Of course, other indicators and switches may be substituted. Note that while examples are given, the circuitry may be implemented in numerous ways, as is well-known in the art, to accomplish the varying programming modes described below.

The temperature of the cooking appliance is measured using a thermistor 310, which is connected externally of the circuit board to the underside of the bottom of the heating chamber. A retention clip 320, shown in FIG. 7, is utilized to hold the thermistor in thermal contact with the bottom 16. In a preferred embodiment, the appliance uses a model USX1732 thermistor manufactured by U.S. Sensor, Inc.

Triac 304, which is preferably a logic Triac Model L400SL6-ND manufactured by Digi-Key, Inc., is utilized to switch the power supplied to the heating elements of the appliance. Preferably, the Triac is of an isolated tab type and includes a heat sink tab that is fastenable to the heat sink 256 shown in FIGS. 8 and 9. Preferably, the Triac is mounted separately to one of the mounting holes on the center portion 256c of the heat sink 256 so that the tab is in thermal contact with the heat sink 256 to dissipate heat generated from its current controlling function. Most of the other components of the circuit 300 are mounted on a conventional printed circuit board 254.

FIG. 11 shows the wiring of the external Triac 304 in relation to the circuit board 254 and heating elements 24. As shown in the Figure, the heating elements 24 are in thermal contact with and wrapping around the interior sidewall 17 of the heating unit.

The operation of the appliance 10 is as follows. The programmable circuitry 300 allows the user to set both the temperature and desired time for cooking. The functions of the switches S1 and S2, which are activatable via the cantilevered portions 264 and 266 of the control panel 224, are as follows:

S1. OFF pushbutton—turns the appliance 10 off.

S2. COOK pushbutton—subsequent pushes of the button cycle through 4 hour, 6 hour, 8 hour and 10 hour cook times.

When the unit is plugged in, the power "on" indicator flashes. The user then pushes the COOK button (switch S2) to set the temperature and cooking time. As the user pushes the COOK switch S2, the LED's D5-D8 illuminate to indicate the corresponding time setting as follows.

LEDs

D3. POWER—on when appliance 10 is in cook or warm modes.

D5. 4 HOUR—on when appliance is in 4-hour cook mode

D6. 6 HOUR—on when appliance is in 6-hour cook mode

D7. 8 HOUR—on when appliance is in 8-hour cook mode

D8. 10 HOUR—on when appliance is in 10-hour cook mode

6

D4. WARM—on when appliance is in half-power mode. Thus, subsequent pushes of the COOK switch S2 activate different cooking modes, as shown by the 6 HOUR, 8 HOUR and 10 HOUR LEDs 262 on the control panel 224. If the COOK switch S2 is pressed in the 10 HOUR mode, the control 280 recycles to the 4 HOUR cooking mode, and its indicator.

In general, full power will be applied to the heating element 24 until the time corresponding to the illuminated LED elapses, after which the power to the heating element 24 is reduced by half, the WARM indicator illuminates and all cook time indicators extinguish. The choices of operation are: 4 or 6 hours on a HI temperature, and 8 to 10 hours on a lower temperature setting. Once the user selects the desired setting, the appliance 10 starts the cooking operation. Once the time setting has expired, the appliance 10 automatically reduces power to the heating element 24 to put the unit in a WARM setting. The unit will stay in the WARM setting until the user pushes the OFF button or unplugs the unit. Of course, other programming schemes are possible.

Preferably, the user cannot set the unit initially in the WARM setting. The system will only go to WARM after one of the time functions has expired. This avoids possible food safety problems that may be associated with cooking food only on the WARM setting. Pressing the OFF switch S1 any time the unit is on preferably removes power from the heating element 24 and extinguishes all indicator LEDs 262.

In another embodiment, the slow-cooker appliance utilizes four push-button switches, rather than two, to set times and temperatures for cooking. An exemplary control panel is depicted in FIG. 12, with control circuitry in FIG. 13. Four momentary pushbutton contact switches 227, 229, 231, 233 are used to trigger various power and setting functions as will be described in the cooking procedure below. Of course, other numbers or types of indicators and switches may be substituted as well. FIG. 13 shows circuitry applicable to such an embodiment, incorporating controller 302, external temperature element 310, digital readout 57, and Power LED 263 and Timer LED 265. The Power LED indicates power is present at the microprocessor controller and the Timer LED indicates that the Timer function is on and working.

The operation of the appliance is as follows. The programmable circuitry allows the user to set both the temperature and the desired cooking time. The functions of the switches 227, 229, 231, 233 on an alternative embodiment of a control panel user interface 225, are as follows:

227. ON/OFF power pushbutton—turns the appliance on and off.

229. TIMER pushbutton—activates stepped timer.

231. UP pushbutton—increases displayed numerical value.

233. DOWN pushbutton—decreases displayed numerical value.

When the unit is plugged in, the unit defaults to 150-degrees F, as shown on the digital display 57. The user may adjust the desired cooking temperature in 25-degree increments using the UP 231 button or the DOWN button 233, with 150 degrees Fahrenheit as a minimum temperature. Once the user has selected the specific temperature, the appliance will start the cooking process.

The user may also select the TIMER mode by pressing the TIMER button 229. In TIMER mode, the controller defaults to 4 hours. The user can use the UP or DOWN controls to increase or decrease the time in 15-minute increments. Once the time is set, the controller 302 will count down the time remaining for cooking in 1 minute increments until the unit

WB 002419

Highly Confidential  
Attorneys' Eyes Only

US 6,573,483 B1

7

"times out". At that time, the power is shut off from the heating element.

In all modes, the temperature is read periodically by the thermistor or other temperature element and relayed to the controller. The reading is checked at 4-second intervals. If the temperature is above or equal to the set point, power is removed. If it is below the set point, power is applied to the heating element 32. Of course, the circuitry can be modified as desired to achieve various program methods and modes.

Another embodiment of the slow cooker appliance adds a piezobuzzer to the circuitry. A piezobuzzer is simply an electrically-activated buzzer that can be programmed to emit a sound at desired moments. In one embodiment, a piezobuzzer may be installed as an output 315, controlled by the microprocessor controller 302, as shown in FIG. 13, and programmed to emit a sound when desired. In one embodiment, the buzzer may beep to provide feedback to a user when a pushbutton is pushed. The slow cooker may also be programmed to emit a sound to indicate the end of the cooking time. The buzzer may also be used to emit sounds at other desired times.

It is intended that the foregoing description illustrates rather than limits this invention, and that it is the following claims, including all equivalents, which define this invention. Of course, it should be understood that a wide range of changes and modifications may be made to the embodiments described above. Accordingly, it is the intention of the applicants to protect all variations and modifications within the valid scope of the present invention. It is intended that the invention be defined by the following claims, including all equivalents.

What is claimed is:

1. A programmable slow-cooker appliance, comprising:

a heating unit;  
a cooking unit adapted to fit at least partially within the heating unit;  
a controller housing fixedly mounted to an outside of the heating unit; and

a programmable controller mounted to the housing to control the heating unit, wherein said housing is configured to conduct heat away from the controller.

2. The slow-cooker appliance of claim 1, wherein the housing is an enclosure for at least a portion of the controller.

3. The slow-cooker appliance of claim 2, wherein the controller housing insulates the controller from the heating unit.

4. The slow-cooker appliance of claim 3, wherein the housing further comprises a heat shield, and the heat shield is made from a material selected from at least one of thermoplastic and insulating materials.

5. The slow-cooker appliance of claim 4, wherein the housing defines ventilation openings configured to allow air to flow into and out of said housing.

8

6. The slow-cooker appliance of claim 5, wherein the housing includes at least a pair of slots defined in an upper and lower part of the housing to define airflow thru the slots and behind the controller.

7. The slow-cooker appliance of claim 1, wherein the controller further comprises control elements and a display.

8. The slow-cooker appliance of claim 7, wherein the control elements are selected from the group consisting of a control panel, push-buttons, switches, and a digital readout.

9. The slow-cooker appliance of claim 1, further comprising a temperature measuring device in communication with said controller.

10. The slow-cooker appliance of claim 1, further comprising a piezobuzzer.

11. A control housing for a slow cooker heating unit, said housing comprising:

a front wall;  
a bottom wall defining at least one lower opening, the bottom wall attached to the front wall;  
a top wall defining at least one upper opening, the top wall attached to the front wall; and  
a circuit board mounted behind the front wall, the circuit board apart from a wall of the heating unit.

12. The control housing of claim 11, further comprising a heat sink between the circuit board and the front wall.

13. A method of using a programmable slow-cooker appliance, the method comprising:

providing a food item;  
placing the food item into a cooking unit of the slow-cooker appliance;  
selecting a cooking temperature and time using a programmable controller mounted to a housing fixedly mounted to a heating unit; and  
changing the heating unit temperature automatically to a lower temperature after the selected time.

14. The method of claim 13, further comprising notifying a user with illuminated indicators that the slow-cooker appliance is powered and that the timer is active.

15. The method of claim 13, wherein the temperature is set by default upon selection of a cooking time.

16. The method of claim 13, wherein the time is selected from the group consisting of 4 hours, 6 hours, 8 hours and 10 hours and the temperature is selected from the group consisting of high and low.

17. The method of claim 13, wherein the temperature and time are set in increments.

18. The method of claim 13, further comprising cooling the electronic circuitry of the programmable controller via a chimney effect.

19. The method of claim 13, further comprising emitting a sound.

\* \* \* \* \*

WB 002420

Highly Confidential  
Attorneys' Eyes Only

# EXHIBIT C

## PART 5

U.S. Patent  
No. 6,740,855

WB 002421

**Highly Confidential  
Attorneys' Eyes Only**



US006740855B1

(12) **United States Patent**  
DeCobert et al.

(10) Patent No.: **US 6,740,855 B1**  
(45) Date of Patent: **\*May 25, 2004**

(54) **PROGRAMMABLE SLOW-COOKER APPLIANCE**

(75) Inventors: **James E. DeCobert, Attleboro, MA**  
(US); **Lorens G. Hlava, Clinton, MO**  
(US); **Charles T. Thrasher, Jr., Clinton, MA (US)**

(73) Assignee: **The Holmes Group, Inc., Milford, MA (US)**

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

4,789,761 A 12/1988 Malone et al.  
4,835,349 A 5/1989 Weber  
4,841,496 A 6/1989 Adams et al.  
4,857,758 A 8/1989 Rigazio et al.  
4,959,512 A 9/1990 Cole et al.  
5,191,231 A 3/1993 Berry  
5,430,598 A 7/1995 Rodolfo et al.  
5,477,029 A 12/1995 Skutt et al.  
5,539,185 A 7/1996 Polster  
5,596,532 A 1/1997 Lim  
5,615,604 A 4/1997 Chenglin  
5,734,149 A 3/1998 Skutt et al.  
5,771,207 A 6/1998 Muroi et al.  
5,834,718 A 11/1998 Amonett  
6,191,393 B1 2/2001 Park  
6,229,507 B1 5/2001 Nakamura et al.  
6,362,459 B1 3/2002 Schmidt  
6,570,139 B1 5/2003 Levy et al.  
6,573,483 B1 6/2003 DeCobert et al.

**FOREIGN PATENT DOCUMENTS**

JP 05-317164 12/1993  
JP 06-327553 11/1994  
JP 07-051158 2/1995  
JP 07-136059 5/1995  
JP 07-241236 9/1995  
JP 08-140833 6/1996  
JP 10-225373 8/1998  
JP 11-137419 5/1999  
JP 11-313761 11/1999  
JP 2001-070139 3/2001  
JP 2001-297865 10/2001  
JP 2002-039546 2/2002  
JP 2003-045630 2/2003

**OTHER PUBLICATIONS**

Rival Crock-Pot® Slow Electric Stoneware Cooker instruction manual.  
Faberware® Millennium® Use & Care Instructions Manual (1999).

Primary Examiner—Mark Paschall

(74) Attorney, Agent, or Firm—Hoffmann & Baron, LLP;  
Francis E. Marino

(57) **ABSTRACT**

A programmable slow-cooker appliance, in which a user sets a time and temperature for cooking a food item. A programmable controller prevents the unit from being used solely as a "keep warm" appliance, and a unique design allows cooling of the controller during cooking.

42 Claims, 12 Drawing Sheets

(21) Appl. No.: 10/386,276

(22) Filed: Mar. 11, 2003

**Related U.S. Application Data**

(63) Continuation of application No. 09/802,174, filed on Mar. 8, 2001, now Pat. No. 6,573,483.

(60) Provisional application No. 60/196,273, filed on Apr. 5, 2000, and provisional application No. 60/189,443, filed on Mar. 15, 2000.

(51) Int. Cl.<sup>7</sup> ..... H05B 1/02

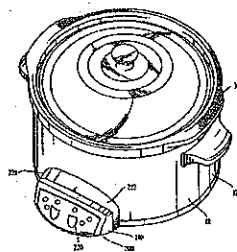
(52) U.S. Cl. .... 219/506; 219/429; 219/435;  
219/436; 219/494; 99/340

(58) Field of Search ..... 219/506, 494,  
219/497, 501, 505, 430-439, 429; 99/340

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

3,681,663 A 8/1972 Albers  
4,313,051 A 1/1982 Aoshima  
4,345,145 A 8/1982 Norwood  
4,535,386 A 8/1985 Frey, Jr. et al.  
4,551,590 A 11/1985 Mahon  
4,566,802 A 1/1986 Koehler  
4,668,878 A 5/1987 Wyss  
4,674,890 A 6/1987 Kojima et al.  
4,695,683 A 9/1987 Wingler et al.  
4,695,710 A 9/1987 Yamashita et al.  
4,742,864 A 5/1988 Duell et al.  
4,749,874 A 6/1988 Meisner et al.  
4,764,715 A 8/1988 Kowalewski et al.



WB 002422

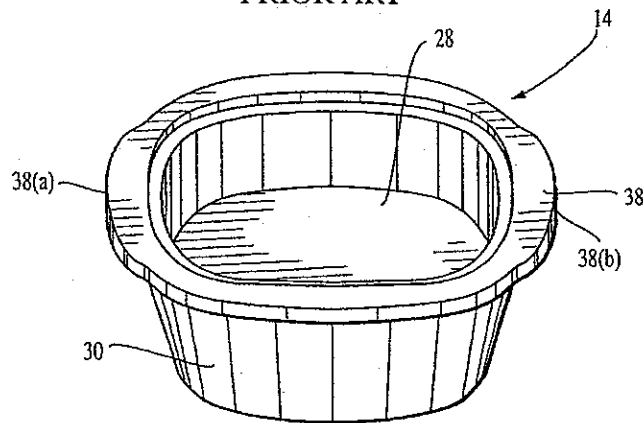
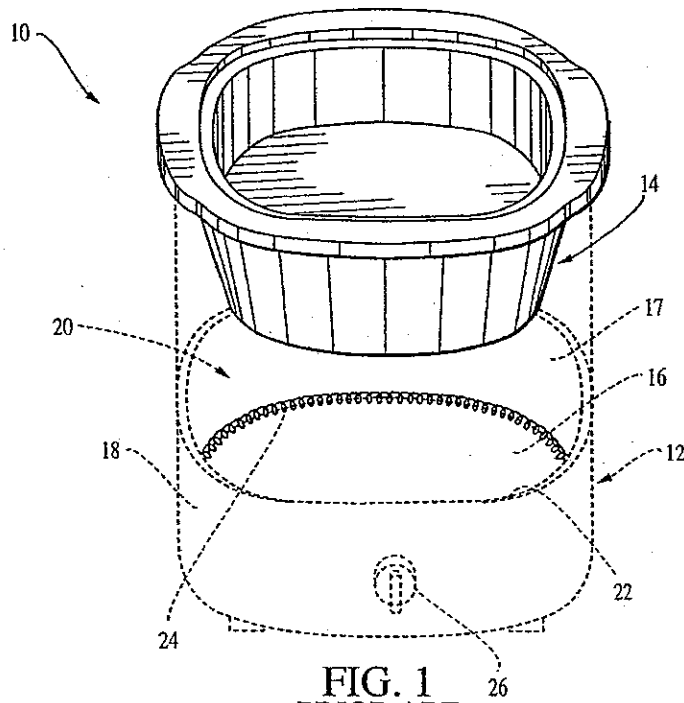
**Highly Confidential**  
**Attorneys' Eyes Only**

U.S. Patent

May 25, 2004

Sheet 1 of 12

US 6,740,855 B1



WB 002423

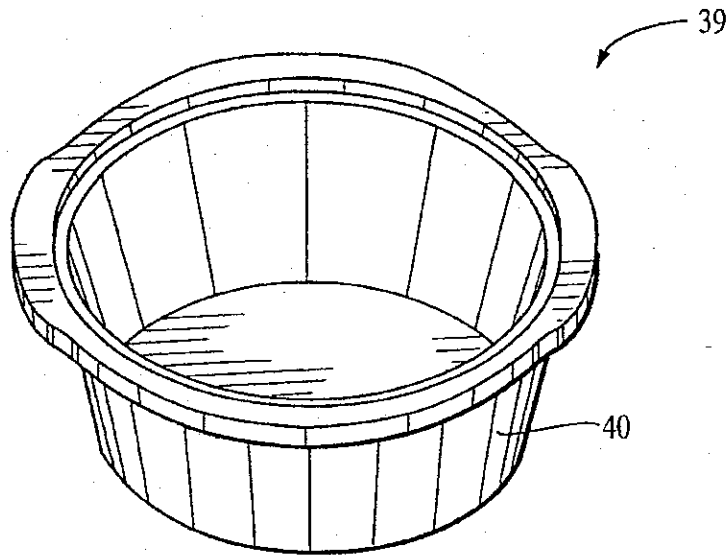
Highly Confidential  
Attorneys' Eyes Only

**U.S. Patent**

May 25, 2004

Sheet 2 of 12

**US 6,740,855 B1**



**FIG. 3**  
**PRIOR ART**

**WB 002424**

**Highly Confidential**  
**Attorneys' Eyes Only**

U.S. Patent

May 25, 2004

Sheet 3 of 12

US 6,740,855 B1

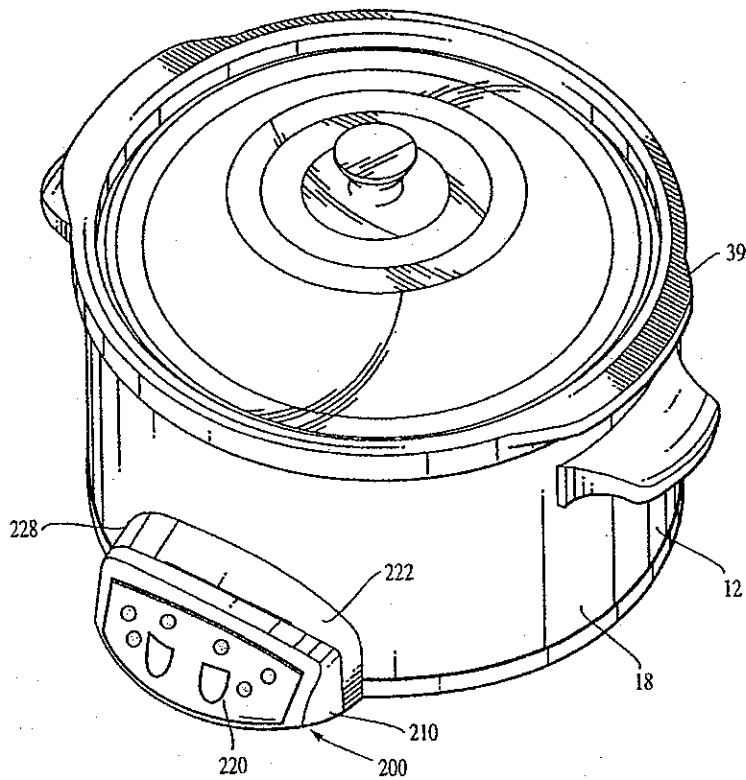


FIG. 4

WB 002425

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

May 25, 2004

Sheet 4 of 12

US 6,740,855 B1

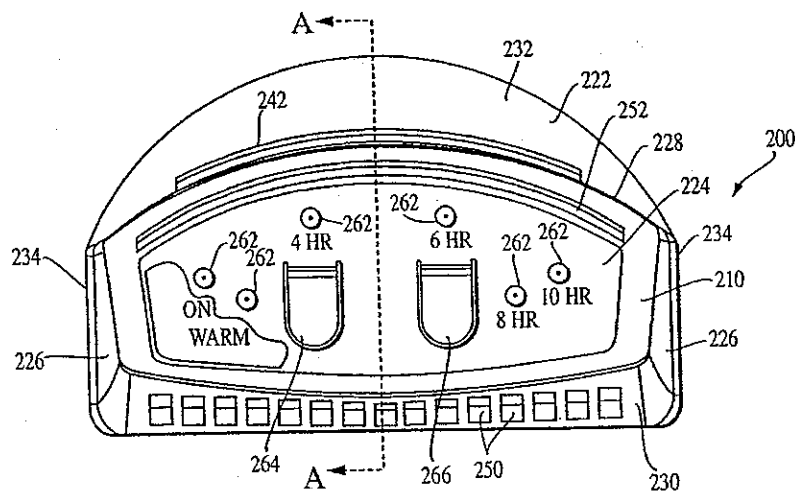


FIG. 5

WB 002426

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

May 25, 2004

Sheet 5 of 12

US 6,740,855 B1

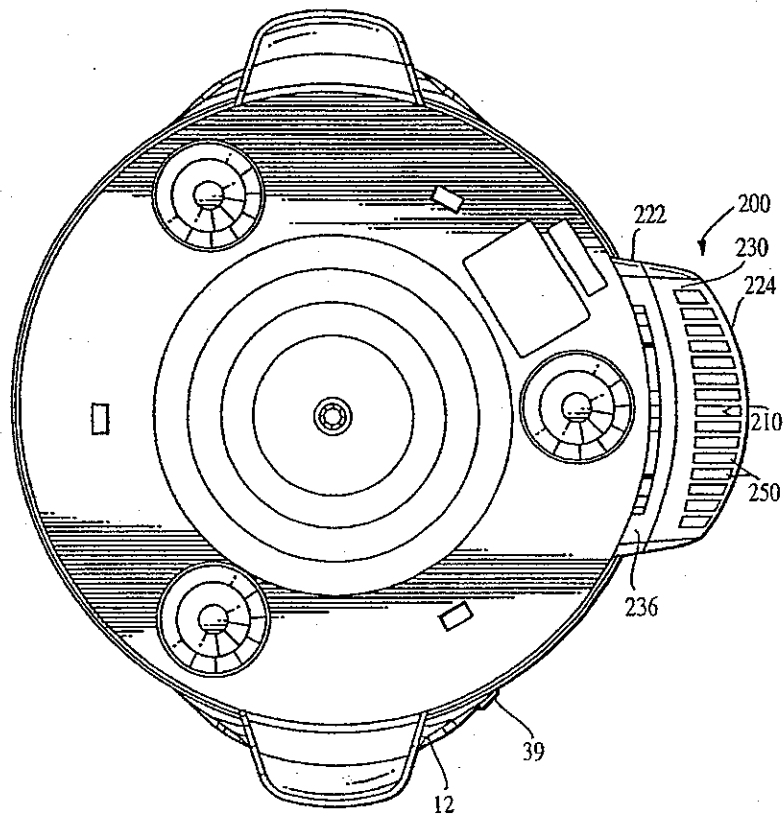


FIG. 6

WB 002427

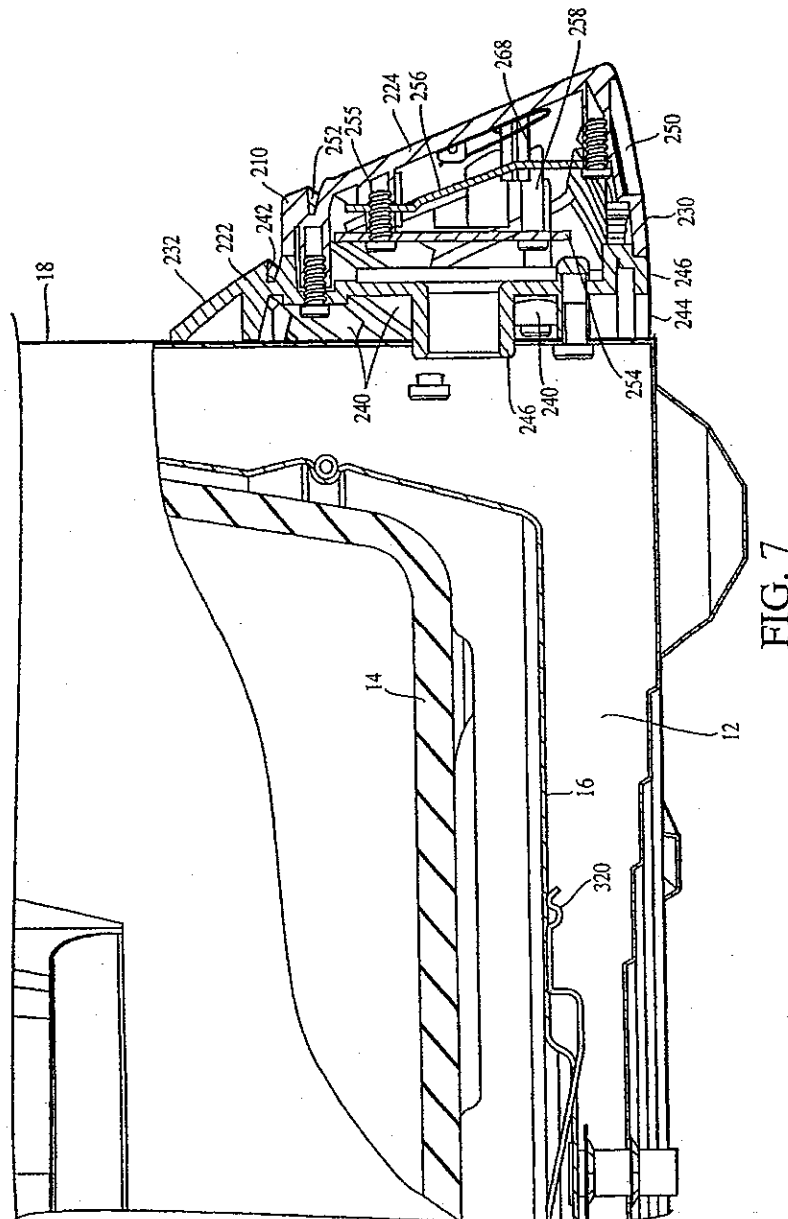
Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

May 25, 2004

Sheet 6 of 12

US 6,740,855 B1



WB 002428

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

May 25, 2004

Sheet 7 of 12

US 6,740,855 B1

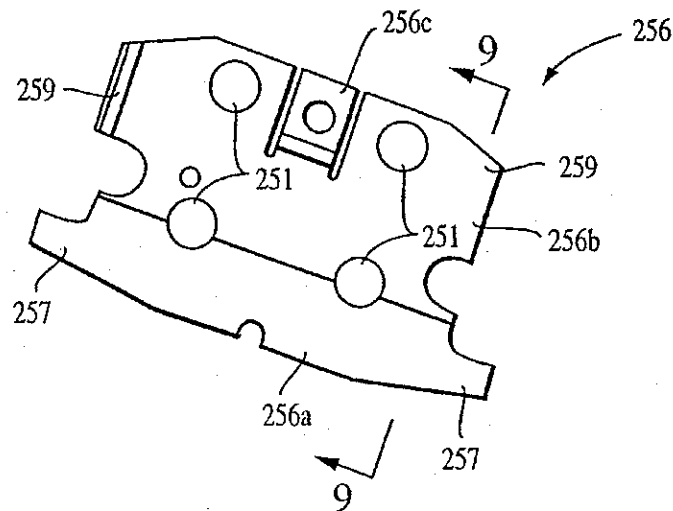


FIG. 8

WB 002429

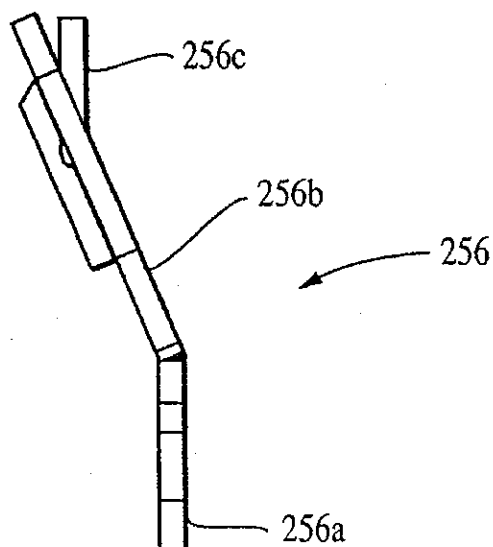
Highly Confidential  
Attorneys' Eyes Only

**U.S. Patent**

May 25, 2004

Sheet 8 of 12

**US 6,740,855 B1**



**FIG. 9**

**WB 002430**

**Highly Confidential  
Attorneys' Eyes Only**

U.S. Patent

May 25, 2004

Sheet 9 of 12

US 6,740,855 B1

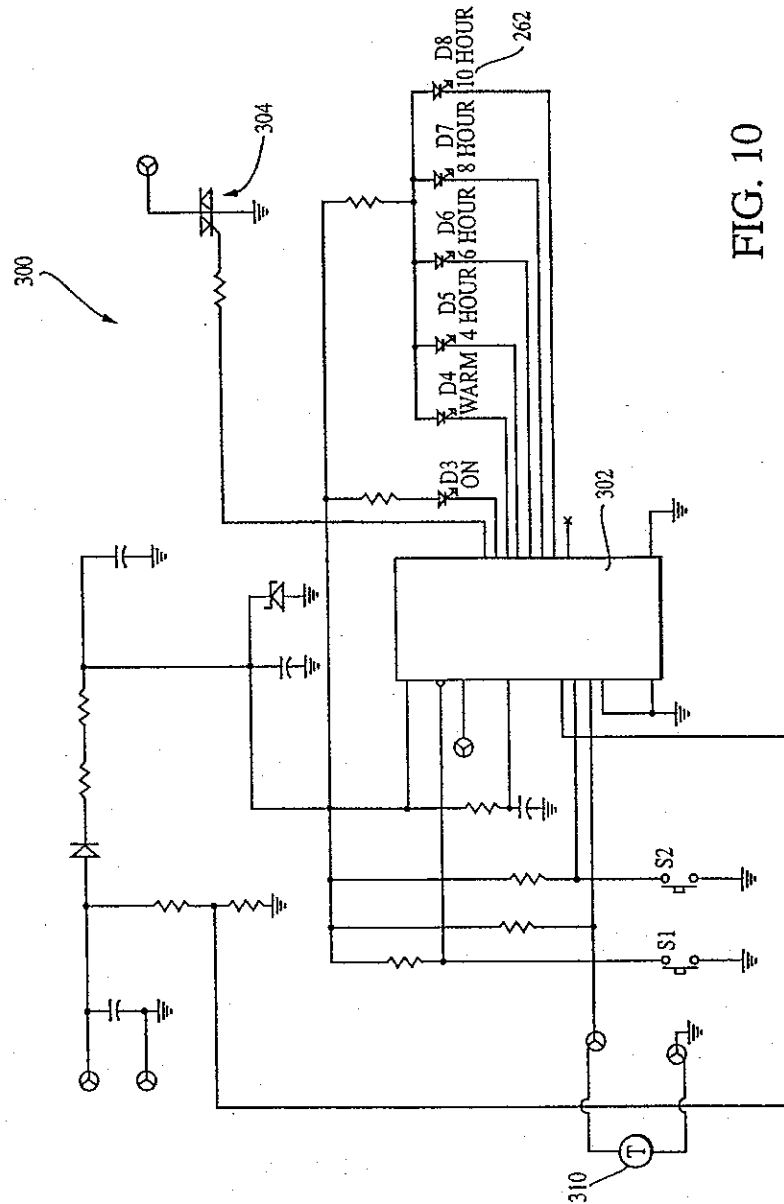


FIG. 10

WB 002431

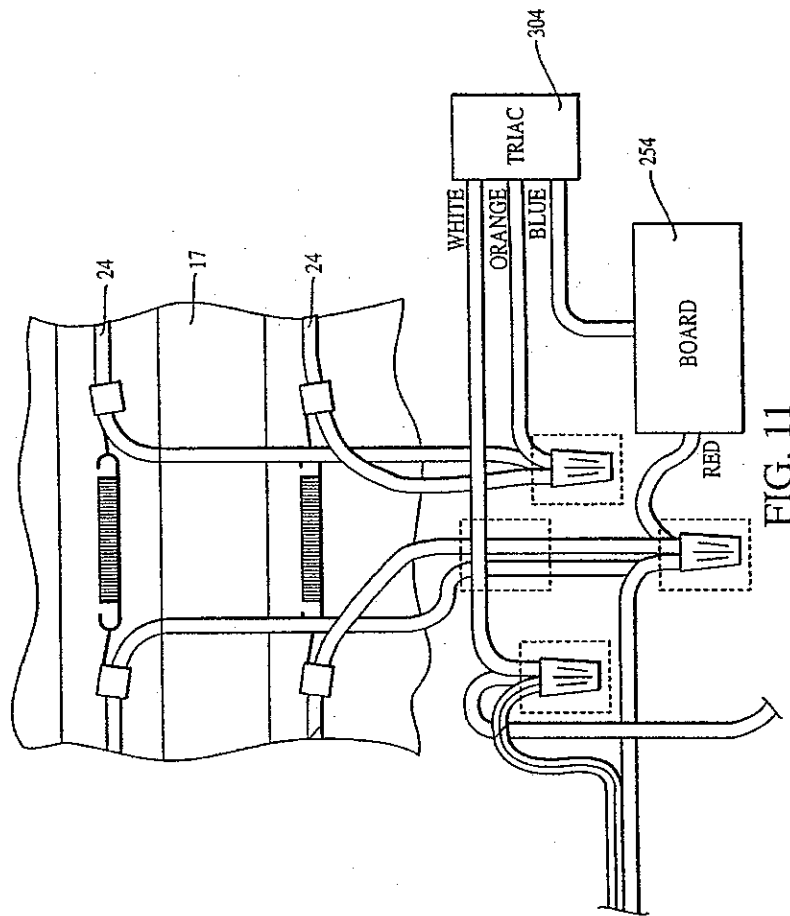
Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

May 25, 2004

Sheet 10 of 12

US 6,740,855 B1



WB 002432

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

May 25, 2004

Sheet 11 of 12

US 6,740,855 B1

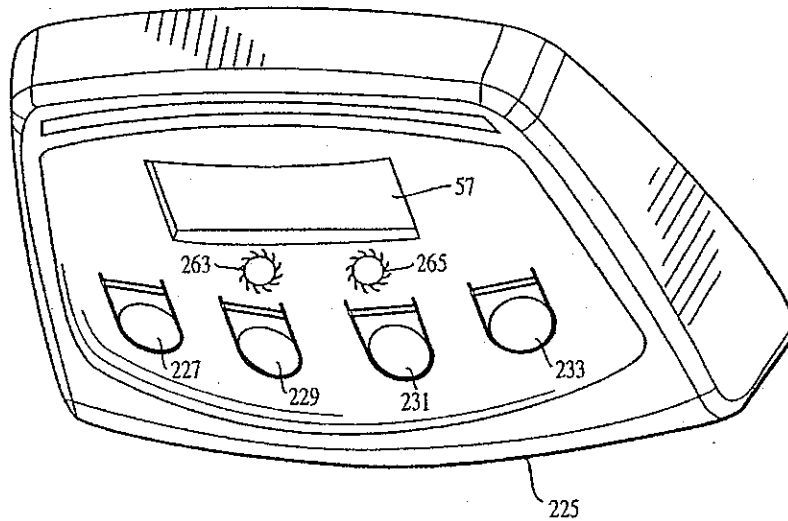


FIG. 12

WB 002433

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

May 25, 2004

Sheet 12 of 12

US 6,740,855 B1

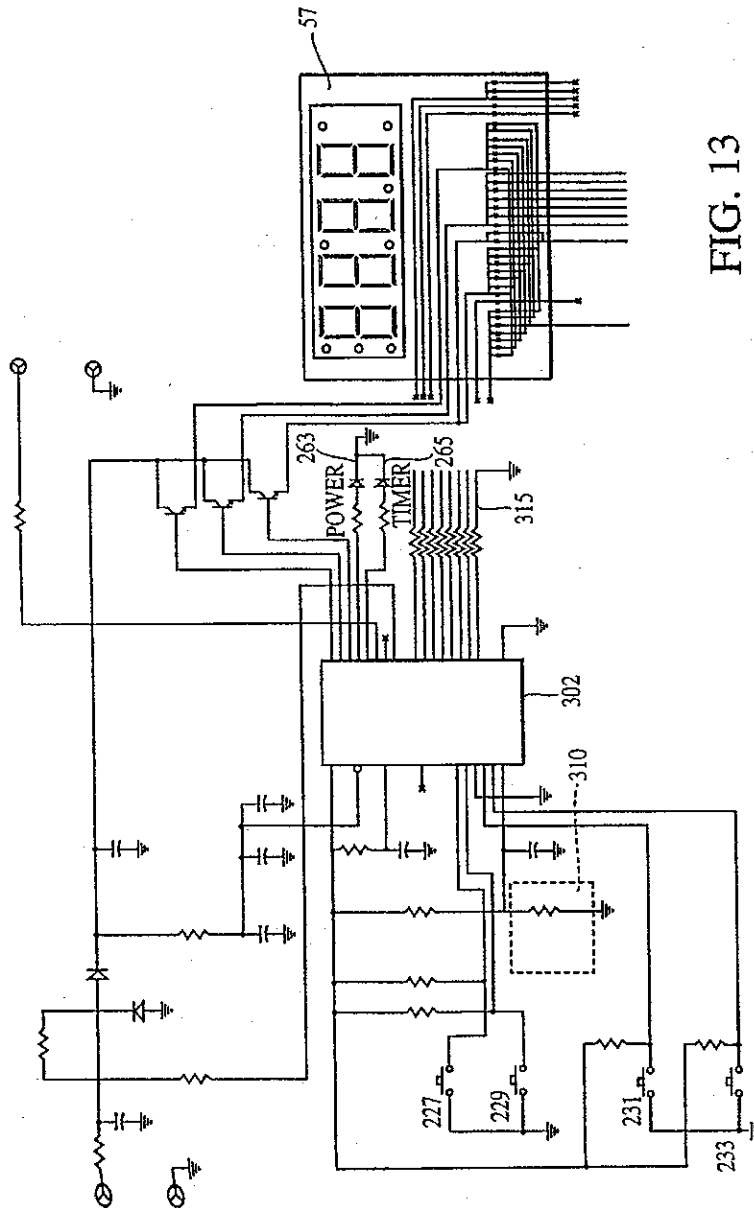


FIG. 13

WB 002434

Highly Confidential  
Attorneys' Eyes Only

US 6,740,855 B1

# 1 PROGRAMMABLE SLOW-COOKER APPLIANCE

This application is a continuation of application Ser. No. 09/802,174, filed Mar. 8, 2001, (pending), which is hereby incorporated by reference herein.

This application claims priority to Provisional Application No. 60/189,443, filed Mar. 15, 2000, and to Provisional Application No. 60/196,273, filed Apr. 5, 2000.

This application also claims priority to U.S. patent application Ser. No. 09/802,174, filed Mar. 8, 2001, now U.S. Pat. No. 6,573,483 the entirety of which is incorporated herein.

## BACKGROUND OF THE INVENTION

Time and convenience are in short supply for homemakers wishing to supply a home-cooked meal to family members. Some appliances, such as slow-cooker appliances, attempt to meet this need by providing all-day cooking while a homemaker is absent. Such appliances, however, tend to be of the type where only one temperature and all day cooking is possible, regardless of the food item, and thus potentially subjecting the food item to over- or under-cooking. Another option may be to use a cooking unit with a controller, where a user may set a time or temperature desired. These units, however, tend to be quite a bit larger and more expensive than slow-cooker appliances. If these units are of more reasonable size, they also suffer because the controller inevitably must be placed near the heating element.

What is needed is a cooking appliance in which the user retains control over the time and temperature of cooking, but which is small enough to be convenient. What is needed is a slow-cooker unit in which the controller does not become overheated and damaged by the heating element.

## SUMMARY OF THE INVENTION

One embodiment of invention is a programmable slow-cooker appliance, including a heating unit, which includes upstanding sidewalls and a bottom wall. The sidewalls and bottom encompass a heating area. The appliance includes a heating element mounted on the inner surface of the interior wall of the heating unit. In one embodiment, the cooking area may also encompass a cooking unit inside the heating unit, suitable for holding food to be cooked. The appliance includes a programmable controller mounted thereto via a controller housing, which acts to insulate the controller from the heat of the appliance, preferably via a unique system of ventilation. The housing utilizes ventilation holes on its bottom and top to encourage a chimney effect, in which air from the surroundings is drawn through the housing. This air cools the controller, and the air is then exits from ventilation holes near the top of the housing, convecting heat away from the controller.

Another aspect of the invention is a method of using the programmable controller to ensure that food is cooked according to the desires of a user. The user provides a food item and places the food item into the slow-cooker appliance, as described above. The user sets a cooking time and temperature for the programmable slow-cooker unit, using the controls to set both the time and the temperature. The cooking time according to one embodiment may not be set less than four hours, and the temperature may not be set for less than 150 degrees Fahrenheit (66 degrees Celsius). This prevents a user from accidentally setting the cooker to a "warm" temperature, in which food would only be warmed but not cooked thoroughly before consumption. In one embodiment, if the user sets no time or temperature, but

merely turns the cooker on, the cooker defaults to a particular time and temperature, set by the user or the factory, such as a default setting of four hours and 175 degrees Fahrenheit or eight hours and 150 degrees Fahrenheit.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an embodiment of a prior art slow-cooker appliance having an oval shape that may be utilized in the present invention;

FIG. 2 is a perspective view of a prior art embodiment of a cooking unit 14 which may be utilized with the appliance of FIG. 1;

FIG. 3 is a perspective view of a prior art cooking unit 39 similar to that shown in FIG. 2, but having a circular shape;

FIG. 4 is a perspective view of a slow cooker appliance incorporating the present invention;

FIG. 5 is a detailed plan view of a portion of the control 200 of the embodiment of FIG. 4;

FIG. 6 is a bottom plan view of the embodiment of FIG. 4;

FIG. 7 is a side cutaway view of the embodiment of FIG. 4;

FIG. 8 is a plan view of a heat sink 256 as utilized in the embodiment of FIG. 4;

FIG. 9 is a side view taken along a line 9—9 of FIG. 8;

FIGS. 10 and 13 are schematic circuit diagrams showing the circuitry and components implemented in preferred embodiments;

FIG. 11 is a wiring diagram showing some of the electric componentry of the preferred embodiment; and

FIG. 12 is an embodiment of the front panel.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, one prior art embodiment of a food-heating slow-cooker appliance 10 is shown. The appliance 10 preferably comprises a heating unit 12 and a cooking unit 14. An exemplary slow cooker appliance 10 may be a Crock-Pot® Slow Cooker made by The Rival Division of The Holmes Group® of Milford, Mass. The heating unit 12 preferably has a bottom 16 and a continuous outer sidewall 18. The bottom 16 and an interior sidewall 17 define a well-like heating chamber 20 having an oval cross-section, and the interior sidewall 17 defines an annular lip 22 at an upper edge of the outer sidewall 18 and the interior sidewall 17. The heating chamber 20 has a heating element 24 disposed therein and mounted to the heating unit 12, either under the bottom 16 or additionally between the outer sidewall 18 and the interior sidewall 17. A control switch 26 is conventionally used to provide electricity to the heating element 24. The heating element 24 functions to heat the cooking unit 14 via the heating chamber 20.

As shown in FIG. 2, the cooking unit 14 has a bottom 28 with preferably a continuous sidewall 30 upstanding therefrom. The continuous sidewall 30 preferably has an annular lip 38 projecting in flange-like fashion from the upper end thereof and a substantially oval cross-section. The cooking unit 14 is adapted to be at least partially received within the heating unit 12 with the annular lip 38 of the cooking unit 14 preferably engaging the annular lip 22 of the heating unit 12, supporting the cooking unit 14 within the heating unit 12. Preferably, the annular lip 38 further defines a pair of handle portions 38(a) and 38(b) to facilitate lifting the cooking unit 14. The cooking unit 14 is preferably made of ceramic with a coating of conventional glazing compound.

WB 002435

Highly Confidential  
Attorneys' Eyes Only

US 6,740,855 B1

3

The thermal and heat retaining properties of the ceramic cooking unit 14 allow it to conduct heat from the heating chamber 20 through the sidewall 30. This provides even heating throughout the unit 14.

As shown in FIG. 3, an alternative embodiment of the appliance 10 includes a cooking unit 39 having a sidewall 40 and a substantially circular cross-section. This embodiment is preferably adapted to fit within a heating unit having a complementary circular heating chamber. This cooking unit 39 is used in an embodiment of the present invention shown in FIG. 4.

In use, the heating unit 12 is provided with a first cooking unit 39. The heating element 24 (not shown) may be powered on and off as necessary to supply heat at a maintained temperature to the cooking unit 39 and the heating chamber via a programmable control 200. The control 200 preferably includes a circuit board housing 210, a control panel 220, and an insulation shield 222 assembled together for attachment to the outer sidewall 18 of the heating unit 12. The interior of the housing 210 contains a printed circuit board 254 (shown in FIG. 7) containing electronic components of the control.

As shown in FIGS. 5 and 6, the housing 210 preferably includes a control panel user interface 224 located on an inclined front surface of the housing 210. Preferably, the housing 210 and insulation shield 222 are made from a thermoplastic material such as polypropylene. A pair of side walls 226, a top wall 228, and bottom wall 230 are preferably located adjacent the control panel 224 and support the control panel 224 in an inclined position away from the front of the cooking appliance 10. This gives the user access to the control panel 224, and also locates the controls and componentry within the housing 210 away from a significant amount of the heat generated by the appliance 10. The printed circuit board 254 may be mounted via threaded screws 255 to rearwardly projecting screw receiving portions 258 on the rear side of the housing 210.

The control panel 224 includes a plurality of indicator lights, such as LEDs 262, spaced on the front panel 224. As is well-known in the art, a variety of other indicator devices may be provided, including digital readouts, audible alarms, liquid crystal displays, incandescent lamps or fluorescent readouts. Preferably, the control panel 224 also includes a plurality of cantilevered portions 264 and 266 as shown in FIG. 5. The cantilevered portions 264, 266 preferably include rearwardly projecting fingers 268 (shown in FIG. 7) which translate the depression of the portions 264, 266 toward the rear portion of the housing 210. The fingers 268 are preferably used to depress pushbutton switch portions located on the circuit board 254. A water-impermeable label membrane may be applied over the front of the control panel 224 to label the indicators 262 and cantilevered portions 264 and 266 for the user. The membrane may also protect the front control panel 224 from damage from spilled foods or liquids and facilitate cleaning.

To further protect the electronic componentry within the housing 210 from the heat generated by the appliance 10, the annular shield member 222 is preferably sized for interposition between the heating unit 12 and the housing 210. In particular, as shown in FIGS. 5 and 6, the shield 222 includes a top wall 232, a pair of side walls 234, and a bottom wall 236. The shield 222 acts as a ventilated spacer to hold the electronic components and the housing 210 at a distance away from sidewall of the cooking unit 12.

In order to dissipate heat that may otherwise be retained between the cooking unit 12 and the rear of the housing 210,

4

an air circulation space is provided within the shield. In particular, as shown in the side cutaway view of FIG. 7, the air space 240 behind the shield 222 may vent warmer air out through an upper elongated slot 242 defined within the top wall 232 of the shield 222. Likewise, an elongated slot 244 is defined into the air space 240 in the bottom wall 236 of the shield 222. Heated air may thus escape through the top elongated slot 242 and cooler air may enter the air space 240 through the bottom elongated slot 244. As shown in FIG. 7, the shield 222 also preferably defines a rearwardly projecting cylindrical flange 246 that extends into the outer wall 18 to allow passage of control and power wiring between the interior of the heating unit 12 and the interior of the housing 210.

In a similar fashion, air circulation is promoted through the housing 210 through a set of openings, preferably defined between the upper portion and, the bottom of the housing 210. In particular, a plurality of openings 250 are defined within the bottom wall 230 of the housing 210. An elongated upper slot 252 is provided on the front face 224 of the housing 210. This allows air to freely circulate behind the control panel 224 and assist in the dissipation of heat from the circuit board 254 and its electronic componentry within the housing 210. Preferably, a heat sink 256 is provided as shown in FIG. 7 and positioned between the circuit board 254 and the front panel 224 inside the housing 210. The sink 256 preferably includes a plurality of openings defined therein to allow air to circulate between the openings 250 and 252 and through and around the heat sink 256 to dissipate additional heat therefrom. Also shown is the relative position of cooking unit 14.

FIGS. 8 and 9 show a detailed view of the heat sink 256. Preferably, the heat sink is machined from 0.063 inch thick 3003-0 anodized aluminum. The heat sink 256 is preferably bent at a 160 degree angle between a bottom flange portion 256a and an upper portion 256b. A centrally located retaining tab portion 256c is bent parallel with the lower portion 256a, and the portions 256a and 256c are used for attachment of the heat sink 256 to the rear side of the housing 210 interior via the rearwardly projecting screw receiving portions 258. To maximize the dissipation of heat, a plurality of winged sections 257 and 259 are provided on the heat sink 256 and extend outwardly from a center portion 256a of the heat sink 256. A plurality of openings are defined through the heat sink 256 to allow the fingers 258 of the control panel cantilevered portions 264, 266 to project through the heat sink and contact the circuit board 254 at the rear of the housing 210. The openings 251 also facilitate cooling air flow through and past the heat sink 256 to further dissipate heat therefrom.

The circuit board 254 mounts circuitry and logic allowing the user of the appliance 10 to electronically control and program cooking cycles and temperature. A schematic diagram of the electronic circuitry and components is shown in FIG. 10. The diagram shows a preferred exemplary circuit incorporating preferred components as utilized in the preferred embodiment of the present invention. One skilled in the art will recognize that the componentry illustrated herein is exemplary only and that many other components may be substituted to achieve the functions described herein. FIG. 10 includes labels for each of the components of the circuit, and only major components will be described herein.

First, as shown in the diagram, the preferred circuit 300 is preferably built around an EPROM/ROM-based CMOS microprocessor controller 302, such as the PIC16CR54C RISC CPU manufactured by Microchip Technology, Inc. The chip output preferably includes circuited drivers for 6

WB 002436

Highly Confidential  
Attorneys' Eyes Only

US 6,740,855 B1

5

LED indicators 262 (labeled D3-D8) as shown. These LED indicators may be assigned labels as follows:

LED	Indicates
D3	On
D4	WARM
D5	4 HOUR
D6	6 HOUR
D7	8 HOUR
D8	10 HOUR

Two momentary pushbutton contact switches S1 and S2 are used to trigger the "Off" and "Cook" features, respectively, as will be described in the cooking procedure below. Of course, other indicators and switches may be substituted. Note that while examples are given, the circuitry may be implemented in numerous ways, as is well-known in the art, to accomplish the varying programming modes described below.

The temperature of the cooking appliance is measured using a thermistor 310, which is connected externally of the circuit board to the underside of the bottom of the heating chamber. A retention clip 320, shown in FIG. 7, is utilized to hold the thermistor in thermal contact with the bottom 16. In a preferred embodiment, the appliance uses a model USX1732 thermistor manufactured by U.S. Sensor, Inc.

Triac 304, which is preferably a logic Triac Model L4008L6-ND manufactured by Digi-Key, Inc., is utilized to switch the power supplied to the heating elements of the appliance. Preferably, the Triac is of an isolated tab type and includes a heat sink tab that is fastenable to the heat sink 256 shown in FIGS. 8 and 9. Preferably, the Triac is mounted separately to one of the mounting holes on the center portion 256a of the heat sink 256 so that the tab is in thermal contact with the heat sink 256 to dissipate heat generated from its current controlling function. Most of the other components of the circuit 300 are mounted on a conventional printed circuit board 254.

FIG. 11 shows the wiring of the external Triac 304 in relation to the circuit board 254 and heating elements 24. As shown in the Figure, the heating elements 24 are in thermal contact with and wrapping around the interior sidewall 17 of the heating unit.

The operation of the appliance 10 is as follows. The programmable circuitry 300 allows the user to set both the temperature and desired time for cooking. The functions of the switches S1 and S2, which are activatable via the cantilevered portions 264 and 266 of the control panel 224, are as follows:

S1. OFF pushbutton—turns the appliance 10 off.

S2. COOK pushbutton—subsequent pushes of the button cycle through 4 hour, 6 hour, 8 hour and 10 hour cook times.

When the unit is plugged in, the power "on" indicator flashes. The user then pushes the COOK button (switch S2) to set the temperature and cooking time. As the user pushes the COOK switch S2, the LED's D5-D8 illuminate to indicate the corresponding time setting as follows.

#### LEDs

D3. POWER—on when appliance 10 is in cook or warm modes.

D5. 4 HOUR—on when appliance is in 4-hour cook mode

D6. 6 HOUR—on when appliance is in 6-hour cook mode

D7. 8 HOUR—on when appliance is in 8-hour cook mode

6

D8. 10 HOUR—on when appliance is in 10-hour cook mode

D4. WARM—on when appliance is in half-power mode. Thus, subsequent pushes of the COOK switch S2 activate different cooking modes, as shown by the 6 HOUR, 8 HOUR and 10 HOUR LEDs 262 on the control panel 224. If the COOK switch S2 is pressed in the 10 HOUR mode, the control 200 recycles to the 4 HOUR cooking mode, and its indicator.

In general, full power will be applied to the heating element 24 until the time corresponding to the illuminated LED elapses, after which the power to the heating element 24 is reduced by half, the WARM indicator illuminates and all cook time indicators extinguish. The choices of operation are: 4 or 6 hours on a HI temperature, and 8 to 10 hours on a lower temperature setting. Once the user selects the desired setting, the appliance 10 starts the cooking operation. Once the time setting has expired, the appliance 10 automatically reduces power to the heating element 24 to put the unit in a WARM setting. The unit will stay in the WARM setting until the user pushes the OFF button or unplugs the unit. Of course, other programming schemes are possible.

Preferably, the user cannot set the unit initially in the WARM setting. The system will only go to WARM after one of the time functions has expired. This avoids possible food safety problems that may be associated with cooking food only on the WARM setting. Pressing the OFF switch S1 any time the unit is on preferably removes power from the heating element 24 and extinguishes all indicator LEDs 262.

In another embodiment, the slow-cooker appliance utilizes four push-button switches, rather than two, to set times and temperatures for cooking. An exemplary control panel is depicted in FIG. 12, with control circuitry in FIG. 13. Four momentary pushbutton contact switches 227, 229, 231, 233 are used to trigger various power and setting functions as will be described in the cooking procedure below. Of course, other numbers or types of indicators and switches may be substituted as well. FIG. 13 shows circuitry applicable to such an embodiment, incorporating controller 302, external temperature element 310, digital readout 57, and Power LED 263 and Timer LED 265. The Power LED indicates power is present at the microprocessor controller and the Timer LED indicates that the Timer function is on and working.

The operation of the appliance is as follows. The programmable circuitry allows the user to set both the temperature and the desired cooking time. The functions of the switches 227, 229, 231, 233 on an alternative embodiment of a control panel user interface 225, are as follows:

227. ON/OFF power pushbutton—turns the appliance on and off.

229. TIMER pushbutton—activates stepped timer.

231. UP pushbutton—increases displayed numerical value.

233. DOWN pushbutton—decreases displayed numerical value.

When the unit is plugged in, the unit defaults to 150-degrees F. as shown on the digital display 57. The user may adjust the desired cooking temperature in 25-degree increments using the UP 231 button or the DOWN button 233, with 150 degrees Fahrenheit as a minimum temperature. Once the user has selected the specific temperature, the appliance will start the cooking process.

The user may also select the TIMER mode by pressing the TIMER button 229. In TIMER mode, the controller defaults to 4 hours. The user can use the UP or DOWN controls to

WB 002437

Highly Confidential  
Attorneys' Eyes Only

US 6,740,855 B1

7

increase or decrease the time in 15-minute increments. Once the time is set, the controller 302 will count down the time remaining for cooking in 1 minute increments until the unit "times out". At that time, the power is shut off from the heating element.

In all modes, the temperature is read periodically by the thermistor or other temperature element and relayed to the controller. The reading is checked at 4-second intervals. If the temperature is above or equal to the set point, power is removed. If it is below the set point, power is applied to the heating element 32. Of course, the circuitry can be modified as desired to achieve various program methods and modes.

Another embodiment of the slow cooker appliance adds a piezobuzzer to the circuitry. A piezobuzzer is simply an electrically-activated buzzer that can be programmed to emit a sound at desired moments. In one embodiment, a piezobuzzer may be installed as an output 315, controlled by the microprocessor controller 302, as shown in FIG. 13, and programmed to emit a sound when desired. In one embodiment, the buzzer may beep to provide feedback to a user when a pushbutton is pushed. The slow cooker may also be programmed to emit a sound to indicate the end of the cooking time. The buzzer may also be used to emit sounds at other desired times.

It is intended that the foregoing description illustrates rather than limits this invention, and that it is the following claims, including all equivalents, which define this invention. Of course, it should be understood that a wide range of changes and modifications may be made to the embodiments described above. Accordingly, it is the intention of the applicants to protect all variations and modifications within the valid scope of the present invention. It is intended that the invention be defined by the following claims, including all equivalents.

What is claimed is:

1. A programmable slow-cooker appliance comprising:

a heating unit including a bottom and a continuous sidewall extending from said bottom, said bottom and said continuous sidewall including an outer sidewall and an interior sidewall and defining a well-like heating chamber;

a heating element mounted to said heating unit and disposed between said outer sidewall and said interior sidewall;

a cooking unit at least partially received within said well-like chamber;

a non-conductive housing fixedly mounted to and projecting outside said continuous sidewall of said heating unit, said housing having a bottom wall;

a lower vent in said bottom wall of said housing for admitting relatively cool air to said housing;

an upper vent in said housing for allowing the escape of relatively warm air from said housing;

a programmable circuit positioned within said housing such that heat is convected away therefrom as air passes through said housing and said vents and electrically connected to said heating element to electronically control and program cooking cycles and temperature; and

a control panel on said housing, said control panel being electronically connected to said programmable circuit.

2. A programmable slow-cooker appliance as described in claim 1 wherein said housing is comprised of a shield and a housing portion, said shield being interposed between and adjoining said outer sidewall of said heating unit and said housing portion, said control panel being incorporated on said housing portion.

8

3. A programmable slow-cooker appliance as described in claim 2 including a circuit board including said circuit mounted to and positioned within said housing, and a Triac electrically connected between said circuit board and said heating element.

4. A programmable slow-cooker appliance as described in claim 3 further including a heat sink position within said housing between said circuit and said control panel.

5. A programmable slow-cooker appliance as described in claim 4 wherein said Triac includes a heat sink tab in thermal contact with said heat sink.

6. A programmable slow-cooker appliance as described in claim 1 wherein said control panel includes a user interface located on an inclined front surface of said housing spaced away from said outer sidewall of said heating unit.

7. A programmable slow-cooker appliance as described in claim 6 wherein said lower and upper vents are positioned to allow air to circulate behind said control panel and assist in the dissipation of heat from said programmable circuit.

8. A programmable slow-cooker appliance as described in claim 6 wherein said housing is comprised of a shield and a housing portion, said shield being interposed between and adjoining said outer sidewall of heating unit and said housing portion, said control panel being incorporated on said housing portion.

9. A programmable slow-cooker appliance as described in claim 8 wherein said upper and lower vents are in said housing portion.

10. A programmable slow cooker appliance as described in claim 9 wherein said housing is comprised of a thermoplastic material.

11. A programmable slow-cooker appliance as described in claim 1 wherein said cooking unit is made from a ceramic material and is removably positioned in said well-like chamber.

12. A programmable slow-cooker appliance comprising:

a heating unit including a bottom and a continuous sidewall extending from said bottom, said bottom and said continuous sidewall defining a well-like chamber;

a heating element mounted to said heating unit for providing heat to said well-like chamber;

a ceramic cooking unit removably positioned in said well-like chamber;

a non-conductive housing fixedly mounted to and projecting outside said continuous sidewall of said heating unit;

a programmable circuit positioned within said housing and electrically connected to said heating element to electronically control and program cooking cycles and temperature;

means including vents in said housing for cooling said programmable circuit by convecting heat away therefrom; and

a control panel mounted to said housing and electrically connected to said programmable circuit.

13. A programmable slow-cooker appliance as described in claim 12 wherein said programmable circuit includes a microprocessor controller.

14. A programmable slow-cooker appliance as described in claim 13 wherein said housing is comprised of a shield and a housing portion, said shield being interposed between and adjoining said sidewall of said heating unit and said housing portion, said control panel being incorporated on said housing portion.

15. A programmable slow-cooker appliance as described in claim 12 including means for automatically switching said heating element from a cook mode to a warm mode.

WB 002438

Highly Confidential  
Attorneys' Eyes Only

US 6,740,855 B1

9

16. A programmable slow-cooker appliance as described in claim 15 including a Triac electrically connected between said programmable circuit and said heating element.

17. A programmable slow-cooker appliance as described in claim 16 including a heat sink positioned within said housing, said Triac including a heat sink tab in thermal contact with said heat sink.

18. A programmable slow-cooker appliance as described in claim 12 wherein said means for cooking includes a lower vent in said housing for admitting relatively cool air to said housing and an upper vent in said housing for allowing the escape of relatively warm air from said housing.

19. A programmable slow-cooker appliance as described in claim 12 wherein said programmable circuit is configured to switch said heating element from a cooking mode to a warming mode at the expiration of a set cooking time.

20. A programmable slow-cooker appliance comprising:

a heating unit including a bottom and a continuous sidewall extending from said bottom, said bottom and said continuous sidewall defining a well-like chamber, said continuous sidewall including an outer sidewall and an interior sidewall;

a heating element mounted to said heating unit and disposed between said outer sidewall and said interior sidewall;

a housing fixedly mounted to and projecting outside said continuous sidewall of said heating unit;

a programmable circuit positioned within said housing and configured to automatically switch said heating element from a cook mode to a lower temperature warm mode at the end of a set cooking time;

a control panel mounted to said housing and including a user interface connected to said programmable circuit for selecting a cooking temperature and cooking time; and

a cooking unit removably positioned in said well-like chamber.

21. A programmable slow-cooker appliance as described in claim 20 wherein said housing includes a plurality of vent openings, a thermoplastic shield and a housing portion, said shield being disposed between and adjoining said outer sidewall of said heating unit and said housing portion, said housing portion including a control panel.

22. A programmable slow-cooker appliance as described in claim 21 including a heat sink positioned within said housing.

23. A programmable slow-cooker appliance as described in claim 22 including a Triac positioned within said housing and electrically connected between said programmable circuit and said heating element, said Triac being in thermal contact with said heat sink.

24. A programmable slow-cooker appliance as described in claim 20 wherein said housing is comprised of a thermoplastic material and said cooking unit is comprised of a ceramic material, said cooking unit being removably positioned in said well-like chamber.

25. A programmable slow-cooker appliance as described in claim 21 wherein said housing is comprised of a thermoplastic material and said cooking unit is comprised of a ceramic material.

26. A programmable slow-cooker appliance as described in claim 20 wherein said programmable circuit is configured such that a user cannot initially set a lower temperature warm mode.

27. A programmable slow-cooker appliance as described in claim 20 including a switch operatively associated with

10

said control panel, said programmable circuit being configured such that subsequent pushes of said switch activates different cook modes.

28. A programmable slow-cooker as described in claim 27 wherein said housing is vented.

29. A programmable slow-cooker appliance as described in claim 20 wherein said housing includes a thermoplastic portion adjoining and extending into said continuous sidewall of said heating unit.

30. A programmable slow-cooker appliance as described in claim 20 wherein said circuit is configured to default to cause operation of said appliance at a cooking temperature when plugged into a power source.

31. A slow-cooker appliance comprising:

a heating unit including a bottom and a sidewall defining a well-like heating chamber and a heating element for providing heat to said heating chamber;

a ceramic cooking unit including a bottom, a continuous sidewall upstanding from said bottom, and a lip extending outwardly from said sidewall, said cooking unit being dimensioned to be at least partially received within said well-like heating chamber and supported by engagement of said lip with said heating unit;

a housing assembly mounted to and projecting outwardly from said sidewall of said heating unit, said housing assembly including a thermoplastic portion adjoining said outer sidewall, an inclined front surface including a control panel having a user interface, and a vent opening; and

a programmable circuit positioned within said housing assembly, said user interface being connected to said programmable circuit for selecting cooking temperature and cooking time, said programmable circuit being configured to automatically switch said heating element from a cook mode to a lower temperature warm mode at the end of a set cooking time.

32. A slow-cooker appliance as described in claim 31 wherein said thermoplastic portion of said housing assembly extends into said sidewall of said heating unit.

33. A slow-cooker appliance as described in claim 31 wherein said housing assembly includes a bottom wall including a plurality of vent openings.

34. A slow-cooker appliance as described in claim 33 wherein said housing assembly includes a plurality of upper vent openings such that heat is convected away from said programmable circuit as air flows into said housing assembly through said vent openings in said bottom wall, through said housing assembly, and out of said housing assembly through said upper vent openings.

35. A slow-cooker appliance as described in claim 31 including a switch operatively associated with said control panel, said programmable circuit being configured such that subsequent pushes of said switch activates different cook modes.

36. A slow-cooker appliance as described in claim 31 wherein said circuit is configured to default to cause operation of said appliance at a cooking temperature when plugged into a power source.

37. A programmable slow-cooker appliance comprising:

a heating unit including a bottom and a continuous sidewall defining a well-like heating chamber and a heating element positioned for providing heat to said well-like heating chamber;

a cooking unit including a lip and adapted to fit at least partially within said heating unit such that said lip engages a top portion of said heating unit;

WB 002439

Highly Confidential  
Attorneys' Eyes Only

US 6,740,855 B1

11

a housing assembly mounted to and projecting from said sidewall of said heating unit, said housing assembly including a thermoplastic portion adjoining said sidewall of said heating unit, a bottom wall adjoining said sidewall, and an inclined front surface including a control panel user interface spaced from said sidewall; and

a circuit including a programmable controller positioned within said housing assembly and operatively associated with said user interface, said circuit being configured to allow a user to set both cooking temperature and cooking time and to cause said heating element to operate in a warm mode at the expiration of a set cooking time, said control panel being electronically connected to said circuit.

38. A programmable slow-cooker appliance as described in claim 37 wherein said circuit is incorporated on a printed circuit board and a heat sink is positioned in said housing assembly between said printed circuit board and said control panel user interface.

12

39. A programmable slow-cooker appliance as described in claim 37 wherein said bottom wall of said housing assembly is vented.

40. A programmable slow-cooker appliance as described in claim 37 wherein said housing assembly includes an upper vent opening positioned such that, when operated, relatively cool air enters said housing assembly through said vented bottom wall, passes over said circuit, and relatively warm air exits said housing assembly through said upper vent opening.

41. A programmable slow-cooker appliance as described in claim 37 wherein said circuit is configured to default to cause operation of said appliance at a cooking temperature when plugged into a power source.

42. A programmable slow-cooker appliance as described in claim 41 including a switch operatively associated with said control panel such that subsequent pushes of said switch activates different cooking times and temperatures.

\* \* \* \* \*

WB 002440

**Highly Confidential  
Attorneys' Eyes Only**

Excerpts from  
Prosecution History for  
U.S. Pat. No. 6,573,483

WB 002441

**Highly Confidential  
Attorneys' Eyes Only**



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
 United States Patent and Trademark Office  
 Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
 Washington, D.C. 20514  
 www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/802,174	03/08/2001	James E. DeCobert	10367/1913	5948

757 7590 12/05/2001  
 BRINKS HOFER GILSON & LIONE  
 P.O. BOX 10395  
 CHICAGO, IL 60610

EXAMINER

PASCHALL, MARK H

ART UNIT

PAPER NUMBER

3742

DATE MAILED: 12/05/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

WB 002442

PTO-90C (Rev. 07-01)

Highly Confidential  
 Attorneys' Eyes Only


**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

 Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
 Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
--------------------	-------------	-----------------------	---------------------

EXAMINER
----------

ART UNIT	PAPER NUMBER
----------	--------------

DATE MAILED:

 This is a communication from the examiner in charge of your application.  
 COMMISSIONER OF PATENTS AND TRADEMARKS
**OFFICE ACTION SUMMARY**

- ☐ Responsive to communication(s) filed on \_\_\_\_\_
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

- ☒ Claim(s) 1-19 is/are pending in the application.
- Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1-19 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

**Application Papers**

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- ☒ Notice of Reference Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

WB 002443

SEE OFFICE ACTION ON THE FOLLOWING PAGES -

 Highly Confidential  
 Attorneys' Eyes Only

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
2. Claims 1-7,9,11,12,13 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rivelli et al.

Note slots 24 in cover 15 which allow for cooling of the controller.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

WB 002444

**Highly Confidential  
Attorneys' Eyes Only**

made in order for the examiner to consider the applicability of 35 U.S.C. 103 and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 8, 10 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rivelli et al in view of Yung. Rivelli et al teach the claimed subject matter except for showing use of the claimed time and temperature ranges and use of a digital display. However, as set forth in Yung it is conventional to use digital readout and it is considered obvious to choose appropriate temperature ranges and cooking times.

*Conclusion*

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Halva, UK 091' and Baker are cited for disclosing pertinent heating control systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. H. Paschall whose telephone number is (703) 308-1642.

mp

December 2, 2001

*M. H. Paschall*  
Mark Paschall  
Primary Examiner

WB 002445

Highly Confidential  
Attorneys' Eyes Only

Notice of References Cited				Application No. 41802174	Applicant DeRobert et al
				Examining Pachall	Group Art Unit 3742
				Page ____ of ____	
U.S. PATENT DOCUMENTS					
*	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS
A	5910265	6-1999	Baker et al	219	434
B	6274847	8-2001	Hlava et al	219	433
C	6196113	3-2001	Yung	99	327
D	3964852	9-1975	Rivelli et al	219	442
E					
F					
G					
H					
I					
J					
K					
L					
M					
FOREIGN PATENT DOCUMENTS					
*	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS SUBCLASS
N	2061091	5-1981	UK	_____	219 433
O					
P					
Q					
R					
S					
T					
NON-PATENT DOCUMENTS					
*	DOCUMENT (including Author, Title, Source, and Pertinent Pages)				DATE
U					
V					
W					
X					

WB 002446

\* A copy of this reference is not being furnished with this Office action.  
(See Manual of Patent Examining Procedure, Section 707.05(a).)

U.S. Patent and Trademark Office  
PTO-882 (Rev. 9-96)

Part of Paper No. 6

U.S. GPO: 1996-454-457/07504

Highly Confidential  
Attorneys' Eyes Only



FORM PTO-1449	SERIAL NO. 09/802,174	CASE NO. 10367/1913
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (use several sheets if necessary)	FILING DATE March 8, 2001	GROUP ART UNIT 1761
APPLICANT(S):		

REFERENCE DESIGNATION		U.S. PATENT DOCUMENTS				
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS/ SUBCLASS	FILING DATE	
W	A1	4,313,051	01/26/82	Aoshima		
	A2	4,345,145	08/17/82	Norwood		
	A3	4,551,590	11/05/85	Mahon		
	A4	4,566,802	01/28/86	Koehler		
	A5	4,668,878	05/26/87	Wyss		
	A6	4,674,890	06/23/87	Kojima et al.		
	A7	4,695,683	09/22/87	Wingler et al.		
	A8	4,695,710	09/22/87	Yamashita et al.		
	A9	4,749,874	06/07/88	Melsner et al.		
	A10	4,764,715	08/16/88	Kowalewski et al.		
	A11	4,789,761	12/08/88	Malone et al.		
	A12	4,835,349	05/30/89	Weber		
	A13	4,841,496	06/20/89	Adams et al.		
	A14	4,857,758	08/15/89	Rigazio et al.		
	A15	4,959,512	09/25/90	Cole et al.		
	A16	5,191,231	03/02/93	Berry		
	A17	5,430,598	07/04/95	Rodolfo et al.		
V	A18	5,598,552	01/21/97	Lim		
	A19	5,815,604	04/01/97	Chenglin		
W	A20	5,771,207	06/23/98	Murol et al.		
	A21	5,834,718	11/10/98	Amonett		
	A22					

FOREIGN PATENT DOCUMENTS						
EXAMINER INITIAL	DOCUMENT NUMBER	DATE	COUNTRY	CLASS/ SUBCLASS	TRANSLATION YES	NO
	A23					
	A24					
	A25					
	A26					
	A27					

EXAMINER INITIAL	OTHER ART (Including Author, Title, Date, Pertinent Pages, etc.)
A28	
A29	

EXAMINER Mark Paschall Primary Examiner	DATE CONSIDERED 11/30/01
--------------------------------------------	--------------------------

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

WB 002447

Attachment for PTO-948 (Rev. 03/01, or earlier)  
6/18/01

The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities -- 37 CFR 1.85

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the Notice of Allowability. Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made other than correction of informalities, unless the examiner has approved the proposed changes.

Timing of Corrections

Applicant is required to submit the drawing corrections within the time period set in the attached Office communication. See 37 CFR 1.85(a).

Failure to take corrective action within the set period will result in **ABANDONMENT** of the application.

WB 002448

Highly Confidential  
Attorneys' Eyes Only

Case No. 10367/1913

Inventor(s): DeCobert et al  
 Title: Programmable Slow-Cooker Appliance

## POWER OF ATTORNEY

The specification of the above-identified patent application:  
☐ is attached hereto  
☒ was filed on March 8, 2001 as application Serial No. 09/802,174

I hereby revoke all previously granted powers of attorney in the above-identified patent application and appoint the following attorneys to prosecute said patent application and to transact all business in the Patent and Trademark Office connected therewith:

Michael P. Chu - 37,112  
 David W. Okey - 42,959



Please address all correspondence and telephone calls to David W. Okey in care of:

Brinks Hofer Gilson & Lione  
 P.O. Box 10395  
 Chicago, IL 60610  
 (312)321-4200

The undersigned hereby authorizes the U.S. attorneys named herein to accept and follow instructions from Francis E. Marino as to any action to be taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorneys named herein will be so notified by the undersigned.

The Holmes Group, Inc., a Delaware corporation, certifies that it is the assignee of the entire right, title and interest in the patent application identified above by virtue of either:

- ☒ An assignment from the inventor(s) of the patent application identified above, a copy of which is attached hereto.  
 OR  
☐ An assignment from the inventor(s) of the patent application identified above. The assignment was recorded in the Patent and Trademark Office at Reel \_\_\_\_\_, frame \_\_\_\_\_.  
 OR  
☐ A chain of title from the inventor(s), of the patent application identified above, to the current assignee as shown below:

1. From \_\_\_\_\_ To: \_\_\_\_\_  
 The document was recorded in the Patent and Trademark Office at Reel \_\_\_\_\_, frame \_\_\_\_\_, or a copy thereof is attached.
2. From \_\_\_\_\_ To: \_\_\_\_\_  
 The document was recorded in the Patent and Trademark Office at Reel \_\_\_\_\_, frame \_\_\_\_\_, or a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

The undersigned has reviewed the assignment or all the documents in the chain of title of the patent application identified above and, to the best of undersigned's knowledge and belief, title is in the assignee identified above.

The undersigned (whose title is supplied below) is empowered to act on behalf of the assignee.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements are made with the knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature: [Signature] Date: 9/13/01  
 Name: Frank E. Marino  
 Title: Vice President, Intellectual Property

Rev. Dec. 99  
 P:\COMBMON\JMK\10167\_Rival-Holmes (rev 12281947)\10167-1947 Power of Attorney 01-02-01.doc

RECEIVED  
 DEC 05 2001  
 TC 1700

RECEIVED  
 DEC 14 2001  
 3100 MAIL ROOM

WB 002449

Highly Confidential  
 Attorneys' Eyes Only

# EXHIBIT C

## PART 6

**WB 002450**

**Highly Confidential  
Attorneys' Eyes Only**



I hereby certify that this correspondence is being deposited with the United States Postal Service in sufficient postage, as first class mail in an envelope addressed to:

Commissioner for Patents  
Washington, D.C. 20231  
on February 12, 2002

Date of Deposit

David W. Okey

Name of applicants, assignee or  
Registered Representative

*David W. Okey*

Signature

*Feb 12, 2002*  
Date of Signature

19  
3-5-02  
#8

RECEIVED  
MAR 04 2002  
TECHNOLOGY CENTER R3700

Our Case No. 10367/1913

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: DeCobert et al.

Serial No. 09/802,174

Filing Date: March 8, 2001

For: Programmable Slow Cooker  
Appliance

Examiner: Mark H. Paschall

Group Art Unit No. 3742

RESPONSE TO OFFICE ACTION

Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

In response to the December 5, 2001 Office Action, Applicants submit this Response by certificate of mailing. Applicants respectfully request the Examiner to reconsider the application. Applicants request the Examiner to withdraw rejections for anticipation and for obviousness, and to grant the application in view of the following remarks.

WB 002451

Highly Confidential  
Attorneys' Eyes Only

## REMARKS

## 1. Rejections under 35 U.S.C. § 102(b).

The Examiner has rejected Claims 1-7, 9, 11, 12 and 13 for anticipation by U.S. Pat No. 3,904,852, Rivelli et al. ("Rivelli"). The Examiner points to slots 24 in a top portion of Fig. 1 of Rivelli as allowing for cooling of the container. Rivelli discusses the slots at Col. 4, second full paragraph, lines 26-39. Rivelli states that with only the slotted openings 24, there is a dead air space with temperatures of up to 250° F surrounding the controls, including the solid state electronic components used in this controller. Rivelli overcomes this difficulty by providing thick insulation to retard heat transfer into control compartment 54 and computer module 26. Fig. 3 shows the insulation, thick insulating slabs 58 and 64, which insulate the control compartment 26, described in Rivelli's claims as "a thermally insulated compartment."

In contrast, the present invention uses slots in the top and bottom, see Fig. 5, slots which are, for example, depicted with numerals 242 (top) and 250 (bottom) to create a chimney effect, not a dead air space. Claim 1 states that the housing is designed to convect heat away from the controller, while Rivelli is clearly designed to insulate the controller from heat. Claim 11 claims these top and bottom openings specifically, which top and bottom openings are not present in Rivelli. Claims 2-7 and 9 depend from Claim 1. Claim 12 depends from Claim 11, and Claim 13 is a method of using this slow-cooker appliance.

Accordingly, Applicants believe the Examiner's rejection based on anticipation under 35 U.S.C. § 102(b) is overcome. Applicants respectfully request that the Examiner withdraw the rejections under 35 U.S.C. § 102(b) of Claims 1-7, 9, 11, 12, and 13 for anticipation.

2. The Examiner rejected Claims 8, 10, and 14-19 under 35 U.S.C. § 103(a) as being obvious and unpatentable over Rivelli in view of U.S. Pat. No. 6,196,113, Simon Yung ("Yung"). As discussed above, Rivelli discloses an insulated, essentially dead-air space to house controls; Yung discloses an internal fan to control heat distribution, see Fig. 1, numeral 70 and arrows depicting convection. There is no disclosure concerning any special arrangement for the controller 125, as shown in Figs. 5A, 5B and 7.

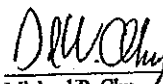
Claims 8, 10, and 14-19 depend from Claims 1 or 13, and include all the limitations of their independent claim. The Applicants therefore believe the Examiner's rejection based on obviousness under 35 U.S.C. § 103(a) is overcome. Applicants respectfully request the

WB 002452

Examiner to withdraw the rejections of Claims 8, 10, and 14-19 for obviousness under 35 U.S.C. § 103(a).

3. Applicants believe that the Examiner's rejections have been overcome, and respectfully request the Examiner to withdraw the rejections, and allow the present claims. The undersigned invites the Examiner to call 312-321-4711 at the Examiner's convenience, to discuss the issues in this case or if a call will aid in expediting the present application.

Respectfully submitted,



Michael P. Chu  
Reg. No. 37,112  
David W. Okey  
Reg. No. 42,959  
Attorneys for Applicants

BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, ILLINOIS 60610  
(312) 321-4200



GP/3742  
\$2

Serial No. 09/802,174		Filing Date March 8, 2001		Examiner Mark H. Paschall		Case No. 10367/1013	
Inventor(s) James E. Decobert et al.						Group Art Unit 3742	
Title of Invention Programmable Slow-Cooker Appliance							

## TO THE COMMISSIONER FOR PATENTS

Transmitted herewith is Response to Office Action: First Supplemental Information Disclosure Statement (in dup.) Form PTO-1449, eight cited references; check for \$180; and return post card.

- ☐ Small entity status of this application under 37 CFR § 1.27 has been established by verified statement previously submitted.
- ☒ A verified statement to establish small entity status under 37 CFR §§ 1.9 and 1.27 is enclosed.
- ☐ Petition for a \_\_\_\_\_ month extension of time.
- ☐ No additional fee is required.
- ☐ The fee has been calculated as shown below:

				Small Entity		Other Than Small Entity	
	Claims Remaining After Amendment	Highest No. Previously Paid For	Present Extra	Rate	Add'l Fee	Rate	Add'l Fee
Total		Minus		x \$9=		x \$18=	
Indep.		Minus		x \$42=		x \$84=	
				+ \$140=		+ \$280=	
First Presentation of Multiple Dep. Claim				Total add'l fee	\$	Total add'l fee	\$

- ☐ Please charge Deposit Account No. 23-1925 (BRINKS HOFER GILSON & LIONE) in the amount of \$ \_\_\_\_\_. A duplicate copy of this sheet is enclosed.
- ☐ A check in the amount of \$ \_\_\_\_\_ to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge payment of any additional filing fees required under 37 CFR § 1.16 and any patent application processing fees under 37 CFR § 1.17 associated with this communication or credit any overpayment to Deposit Account No. 23-1925. A duplicate copy of this sheet is enclosed.
- ☒ I hereby petition under 37 CFR § 1.136(a) for any extension of time required to ensure that this paper is timely filed. Please charge any associated fees which have not otherwise been paid to Deposit Account No. 23-1925. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

*David W. Okey*  
David W. Okey  
Registration No. 42,958  
Attorney for Applicant

BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, ILLINOIS 60610  
(312) 321-4200

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231, on February 12, 2002.

Date: 12 Feb 2002

Signature: *David W. Okey*

rev. Dec-00  
Document#

RECEIVED

MAR 04 2002

TECHNOLOGY CENTER R3700

WB 002454

Highly Confidential  
Attorneys' Eyes Only

**WB 002455**

**Highly Confidential  
Attorneys' Eyes Only**



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20501  
www.uspto.gov

APPLICATION NO.	FILED DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/802,174	03/08/2001	James E. DeCobert	10367/1913	5948

757 7590 05/21/2002  
BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, IL 60610

EXAMINER

PASCHALL, MARK H

ART UNIT	PAPER NUMBER
3743	

DATE MAILED: 05/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

WB 002456

PTO-90C (Rev. 07-01)

Highly Confidential  
Attorneys' Eyes Only


**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

 Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
--------------------	-------------	-----------------------	---------------------

EXAMINER
----------

ART UNIT	PAPER NUMBER
----------	--------------

10

DATE MAILED:

 This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS
**OFFICE ACTION SUMMARY**
☒ Responsive to communication(s) filed on 2/26/02
☐ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

 A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.138(a).
**Disposition of Claims**
☒ Claim(s) 1-19 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-19 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.
**Application Papers**
☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.
**Priority under 35 U.S.C. § 119**
☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
**Attachment(s)**
☐ Notice of Reference Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 9
☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

WB 002457

- RFF OFFICE ACTION ON THE FOLLOWING PAGES -

 Highly Confidential  
Attorneys' Eyes Only

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-7,9,11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rivelli et al in view of either Frey, Jr. et al or Skutt et al '029.

Rivelli et al teach the claimed subject matter except for showing slots on adjacent sides of the housing (top and bottom) for convection cooling of the electrical components. However, such structure is conventional as evidenced by both Frey, Jr. et al and Skutt et al and in view of the same it would have been obvious to modify the Rivelli et al system with the same to more efficiently extend the life of the device.

WB 002458

**Highly Confidential  
Attorneys' Eyes Only**

3. Claims 8,10 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rivelli et al in view of either Frey, Jr. et al or Skutt et al as set forth above, taken further with Yung. Rivelli et al as modified above teaches the claimed subject matter except for showing use of the claimed time and temperature ranges and use of a digital display. However, as set forth in Yung it is conventional to use digital readout and it is considered obvious to choose appropriate temperature ranges and cooking times.

4. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. H. Paschall whose telephone number is (703) 308-1642.


mp

May 20, 2002

*Mark Paschall*  
Mark Paschall  
Primary Examiner

WB 002459

Highly Confidential  
Attorneys' Eyes Only



FORM PTO-1449	SERIAL NO. 09/802,174	CASE NO. 10367/1913
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (use several sheets if necessary)	FILING DATE March 8, 2001	GROUP ART UNIT 3742
	APPLICANT(S): James E. Decobert et al.	

REFERENCE DESIGNATION		U.S. PATENT DOCUMENTS				
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS/ SUBCLASS	FILING DATE
<i>MM</i>	A1	3,681,863	08/1972	Albers		
	A2	4,535,386	08/1985	Frey, Jr. et al.		
	A3	4,742,864	05/1988	Dueff et al.		
	A4	5,477,029	12/1995	Skutt et al.		
	A5	5,538,185	07/1998	Polster		
	A6	5,734,149	03/1998	Skutt et al.		
<i>MM</i>	A7	6,191,393	02/2001	Park		
	A8	6,229,507	05/2001	Nakamura et al.		

**RECEIVED**  
 MAR 04 2002  
 TECHNOLOGY CENTER R3700

EXAMINER <b>Mark Paschall</b>	DATE CONSIDERED <b>5/20/02</b>
-------------------------------	--------------------------------

EXAMINER: ~~Primary Examiner~~ considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

WB 002460

**WB 002461**

**Highly Confidential  
Attorneys' Eyes Only**

I hereby certify that this correspondence is being deposited with the United States Postal Service, with sufficient postage, as first class mail in an envelope addressed to:

Commissioner for Patents  
Washington, D.C. 20231  
on August 21, 2002  
Date of Deposit

David W. Okey

Name of applicants, assignee or  
Registered Representative

*D. W. Okey*

Signature

21 AUGUST 2002

Date of Signature



COPY OF PAPERS  
ORIGINALLY FILED

9-17-02  
Amey  
11/3

Our Case No. 10367/1913

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: DeCobert et al.

Serial No. 09/802,174

Filing Date: March 8, 2001

For: Programmable Slow Cooker  
Appliance

Examiner: Mark H. Paschall

Group Art Unit No. 3742

RECEIVED

SEP 3 2002

TECHNOLOGY CENTER R3700

RESPONSE TO OFFICE ACTION

Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

In response to the May 21, 2002 Office Action, Applicants have timely submitted this Response and amendment by certificate of mailing. Applicants respectfully request the Examiner to reconsider the application. Applicants request the Examiner to withdraw rejections for anticipation and for obviousness, and to grant the application in view of the following remarks.

WB 002462

Highly Confidential  
Attorneys' Eyes Only

IN THE CLAIMS

Please substitute the claims below for the like-numbered claims in the application. A marked up copy with additions underlined is attached as Appendix A.

1. (Amended) A programmable slow-cooker appliance, comprising:  
a heating unit;  
a cooking unit adapted to fit at least partially within the heating unit;  
a controller housing fixedly mounted to an outside of the heating unit; and  
a programmable controller mounted to the housing to control the heating unit, wherein said housing is configured to convect heat away from the controller.

13. (Amended) A method of using a programmable slow-cooker appliance, the method comprising:  
providing a food item;  
placing the food item into a cooking unit of the slow-cooker appliance;  
selecting a cooking temperature and time using a programmable controller mounted to a housing fixedly mounted to a heating unit; and  
changing the heating unit temperature automatically to a lower temperature after the selected time.

## REMARKS

1. Claims 1-19 are pending in the application. Applicants have amended Claims 1 and 13, for which marked up copies with additions underlined are attached as Appendix A. No new matter was added in amending the claims, for which support is found at least in the specification and in Figs. 4 and 7.

2. Rejections under 35 U.S.C. § 103(a).

The Examiner has rejected Claims 1-7, 9, and 11-13 as being unpatentable over U.S. Pat. No. 3,904,852, Rivelli et al. ("Rivelli") in view of either U.S. Pat. No. 4,535,386, Frey, Jr., et al. ("Frey") or U.S. Pat. No. 5,477,029, Skutt et al. ("Skutt"). Applicants respectfully traverse the rejections, since there is no suggestion in the prior art to combine these references. Even if the references were combinable, the combination does not yield the claimed invention of Claims 1, 11 and 13, which is a programmable slow-cooker appliance comprising a heating unit, a cooking unit, a controller housing mounted outside the heating unit, and a programmable controller mounted to the housing, where heat is convected away from the housing.

The Examiner states that Rivelli teaches the claimed subject matter except for showing cooling slots on the top and bottom sides of the housing for convection cooling of the electrical components, while Frey and Skutt both show cooling slots. The Examiner states that it would have been obvious to modify the system of Rivelli to arrive at the claimed invention. Applicants traverse the Examiner's characterization of Rivelli, which has no convection cooling whatever. Rivelli describes a deep fat frying module in which the control chamber is positioned within a heating module, with dead air space and thick insulation to prevent heat from rising above 250°F. Besides the cooling slots mentioned by the Examiner, channels would also be needed within the housing for effective cooling via convection. Instead, Rivelli uses insulation to prevent conduction of heat to the controller; Rivelli does not use convection to carry heat away from the controller. See Fig. 1 and col. 3, lines 19-28.

Frey discloses a sealed configuration that upwardly circulates warmed air from hot electrical components through a heat exchanger and then into a downward circulating cooling flow. See Figs. 1 and 2, col. 2, lines 11-20, and col. 3, lines 46-59. The combination of Rivelli and Frey does not describe or suggest a device having a controller housing mounted outside the

heating unit nor having other claimed features, such as those that would allow convection to occur. The combination, therefore, does not describe or suggest the claimed invention.

Skutt relates to kilns used for firing pottery or ceramics. Col. 1, lines 1-3. Skutt discloses a ceramic kiln with a control box hinged to the exterior of the kiln. The controller is not mounted directly to the kiln, but connected by hinges, and in direct thermal contact with the kiln only through pins and receptacles for electric power to the kiln. *See* Fig. 7 and col. 3; lines 30-33. As discussed above, Rivelli describes a deep fat frying module (for cooking food) in which the control chamber is positioned within a heating module. There must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant. *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1316 (Fed. Cir. 2000). There is no motivation to combine a cooking implement with a ceramic kiln. Even if combined, the combination does not yield a cooking implement having a controller housing fixedly mounted to an outside of the housing, since the control module of Rivelli is contained within the single housing, while the controller of Skutt is only hingedly mounted to the exterior of the housing. Applicants have amended the claims to better describe the fixed mounting of the housing to the exterior of the heating unit.

Accordingly, Applicants believe the Examiner's rejection based on obviousness under 35 U.S.C. § 103(a) is overcome. Applicants respectfully request that the Examiner withdraw the rejections under 35 U.S.C. § 103(a) of Claims 1-7, 9, 11, 12, and 13 for obviousness.

3. The Examiner rejected Claims 8, 10, and 14-19 under 35 U.S.C. § 103(a) as being unpatentable over Rivelli in view of either Frey or Skutt, as mentioned above, and further in view of U.S. Pat. No. 6,196,113, Simon Yung ("Yung"). Again, applicants respectfully traverse the rejections, since there is no suggestion in the prior art to combine these references. Along with a digital readout and instruments, Yung discloses an internally circulating convection system using a fan. *See* col. 2, lines 53-57 (describing the use of a centrifugal fan to circulate air within a breadmaker).

The combination of Rivelli, Frey, and Yung does not describe or suggest the invention claimed in independent Claims 1, 11 and 13 of the present application, and from which Claims 8, 10, and 14-19 depend. As mentioned above, neither Rivelli nor Frey describe a housing for a programmable controller fixedly mounted to the outside of the heating unit. Yung also fails to

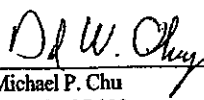
describe a housing for a controller mounted outside the heating unit. In Yung, a programmable controller is mounted inside the housing, not outside. See Figs. 5A and 5B, and also col. 7, lines 34-51. Therefore, the combination of Rivelli, Frey and Yung fail to describe or suggest a controller housing fixedly mounted to the outside of the heating unit.

The combination of Rivelli, Skutt and Yung, certainly improper in light of the ceramic kiln of Skutt, also fails to describe or suggest the claimed invention. While Rivelli and Yung disclose controllers mounted to a single housing, Skutt discloses a kiln in which a controller is not fixedly mounted on the outside of the kiln, but is connected via hinges. *See* Skutt, Fig. 7 and col. 3, lines 30-33 (stating that the control box is spaced away from the kiln exterior and is in direct thermal contact only through the pins and receptacles). Therefore, even an improper combination does not describe or suggest the claimed invention, including a controller housing mounted fixedly to the outside of the heating unit.

The Applicants therefore believe the Examiner's rejection based on obviousness under 35 U.S.C. § 103(a) is overcome. Applicants respectfully request the Examiner to withdraw the rejections of Claims 8, 10, and 14-19 for obviousness under 35 U.S.C. § 103(a).

4. Applicants believe that the Examiner's rejections have been overcome, and respectfully request the Examiner to withdraw the rejections and allow the present claims. The undersigned invites the Examiner to call 312-321-4711 at the Examiner's convenience, to discuss the issues in this case or if a call will aid in expediting the present application.

Respectfully submitted,

  
 Michael P. Chu  
 Reg. No. 37,112  
 David W. Okey  
 Reg. No. 42,959  
 Attorneys for Applicants

BRINKS HOFER GILSON & LIONE  
 P.O. BOX 10395  
 CHICAGO, ILLINOIS 60610  
 (312) 321-4200



APPENDIX A

COPY OF PAPERS  
ORIGINALLY FILED

1. (Amended) A programmable slow-cooker appliance, comprising:  
a heating unit;  
a cooking unit adapted to fit at least partially within the heating unit;  
a controller housing fixedly mounted to an outside of the heating unit; and  
a programmable controller mounted to the housing to control the heating  
unit, wherein said housing is configured to convect heat away from the controller.

13. (Amended) A method of using a programmable slow-cooker appliance, the method  
comprising:

providing a food item;  
placing the food item into a cooking unit of the slow-cooker appliance;  
selecting a cooking temperature and time using a programmable controller  
mounted to a housing fixedly mounted to a heating unit; and  
changing the heating unit temperature automatically to a lower temperature  
after the selected time.

RECEIVED  
SEP 3 2002  
TECHNOLOGY CENTER R3700

*[Handwritten signature]*

WB 002467

Excerpts from  
Prosecution History for  
U.S. Pat. No. 6,740,855

WB 002468

**Highly Confidential**  
**Attorneys' Eyes Only**



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/386,276	03/11/2003	James E. DeCobert	10367/2106	6197

7590 07/30/2003  
David W. Okey  
BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, IL 60610

EXAMINER

PASCHALL, MARK H

ART UNIT

PAYER NUMBER

3742

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

WB 002469

<b>Office Action Summary</b>	Application No.		Applicant(s)	
	10/388,276		DECOBERT ET AL	
	Examiner	Art Unit		
	Mark H Paschall	3742		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.

- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.

- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.

- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☐ Responsive to communication(s) filed on \_\_\_\_.

2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) 34-58 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_ is/are allowed.

6) ☒ Claim(s) 34-58 is/are rejected.

7) ☐ Claim(s) \_\_\_\_ is/are objected to.

8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.

4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: \_\_\_\_.

WB 002470

Application/Control Number: 10/386,276  
Art Unit: 3742

Page 2

***Continued Prosecution Application***

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 34-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rivelli et al in view of wither Skutt et al 149' or Polster. Rivelli et al teach the claimed controller for a programmable cooker including inner and outer housings and a control housing 30 which houses pc controller 42. Rivelli et al do not show the claimed upper and lower vents, which enable the controller to remain cool. However, as set forth in both Polster and Skutt et al it is conventional to provide such vents for cooling and use of the same enables a longer lasting and heat insensitive control of the cooking

WB 002471

**Highly Confidential  
Attorneys' Eyes Only**

Application/Control Number: 10/386,276  
Art Unit: 3742

Page 3

process. In view of these teachings it would have been obvious to modify the Rivelli et al system to attain the benefits of a cooler control module by providing upper, and lower vents to create a chimney like air flow in the control chamber.

Note paragraph 2 in column 6 in Polster. Note

Figure 4 in Skutt et al, which also show the venting system. As per the dependent claims it is considered an obvious choice to use a triac and/or heat sink to cool the same, since the elements are conventional elements in cooking devices. As per claim 43 use of thermoplastic as the housing material is an obvious choice since the same is conventionally used in heating devices in place of metal. As per claim 41-note element 56,58, which acts as the claimed shield. As per claim 46 use of a microprocessor is an obvious choice since Rivelli et al teach a printed circuit device as the controller and microprocessors are conventional components in programmable cooking devices.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wood is cited for disclosing an audio alert for a cooking device. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark H Paschall whose telephone number is 703 308-1642. The examiner can normally be reached on 7am - 3pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teresa Walberg can be reached on 703 308-1327. The fax phone numbers

WB 002472

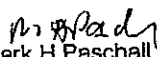
**Highly Confidential  
Attorneys' Eyes Only**

Application/Control Number: 10/386,276  
Art Unit: 3742

Page 4

for the organization where this application or proceeding is assigned are 703 305-3463  
for regular communications and 703 395-3463 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or  
proceeding should be directed to the receptionist whose telephone number is 703 308-  
0861.

  
Mark H Paschall  
Primary Examiner  
Art Unit 3742

\*\*\*

July 27, 2003

WB 002473

Highly Confidential  
Attorneys' Eyes Only

<b>Notice of References Cited</b>	Application/Control No. 10/386,276	Applicant(s)/Patent Under Reexamination DECOBERT ET AL.	
	Examiner Mark H Paschall	Art Unit 3742	Page 1 of 1

## U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-4382178	05-1983	Wood	219/494
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

## FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

## NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

WB 002474

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
 Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

U.S. Patent and Trademark Office  
 PTO-892 (Rev. 01-2001)

Notice of References Cited

Part of Paper No. 6

**Highly Confidential**  
**Attorneys' Eyes Only**

**WB 002475**

**Highly Confidential  
Attorneys' Eyes Only**



RECEIVED

NOV 24 2003

TECHNOLOGY CENTER R3700

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s)	DeCobert et al.	Examiner:	M.H. Paschall
Serial No.:	10/386,276	Group Art Unit:	3742
Confirmation No.:	6197	Docket:	717-675 CON
Filed:	March 11, 2003	Dated:	November 13, 2003
For:	PROGRAMMABLE SLOW-COOKER APPLIANCE		

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

*I hereby certify this correspondence is being deposited  
with the United States Postal Service as first class mail,  
postpaid in an envelope, addressed to:  
Commissioner for Patents, P.O. Box 1450,  
Alexandria, Virginia 22313-1450  
on November 13, 2003.*

Signed: Julie R. Watts

AMENDMENT

Sir:

In response to the Office Action from the Patent and Trademark Office dated July 30, 2003, kindly amend the above-referenced application as follows:

Amendments to the Claims begin on page 2.

Remarks begin on page 14.

11/20/2003 EFLDRES 00000039 082461 10386276

04 FC:1201		172.00 DP
05 FC:1202	114.00 NH	210.00 DP

WB 002476

Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 2 of 21

IN THE CLAIMS:

Listing of Claims:

1-33. (cancelled).

34. (Currently Amended) A programmable slow-cooker appliance comprising:  
a heating unit including a bottom and a continuous sidewall extending from  
said bottom, said bottom and said continuous sidewall including an outer sidewall and an  
interior sidewall and defining a well-like heating chamber;  
a heating element mounted to said heating unit and disposed between said  
outer sidewall and said interior sidewall;  
a cooking unit at least partially received within said well-like chamber;  
a non-conductive housing fixedly mounted to and projecting outside said  
continuous sidewall of said heating unit, said housing having a bottom wall;  
a lower vent in said bottom wall of said housing for admitting relatively cool  
air to said housing;  
an upper vent in said housing for allowing the escape of relatively warm air  
from said housing;  
a programmable circuit positioned within said housing such that heat is  
convected away therefrom as air passes through said housing and said vents and electrically

WB 002477

Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 3 of 21

connected to said heating element to electronically control and program cooking cycles and temperature; and

a control panel on said housing, said control panel being electronically connected to said programmable circuit.

2  
36. (Currently Amended) A programmable slow-cooker appliance as described in claim 34 wherein said housing is comprised of a shield and a housing portion, said shield being interposed between and adjoining said outer sidewall of said heating unit and said housing portion, said control panel being incorporated on said housing portion.

3  
36. (Previously Added) A programmable slow-cooker appliance as described in claim 35 including a circuit board including said circuit mounted to and positioned within said housing, and a Triac electrically connected between said circuit board and said heating element.

4  
36. (Previously Added) A programmable slow-cooker appliance as described in claim 36 further including a heat sink position within said housing between said circuit and said control panel.

6  
36. (Previously Added) A programmable slow-cooker appliance as described in claim 37 wherein said Triac includes a heat sink tab in thermal contact with said heat sink.

WB 002478

18  
Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 4 of 21

636. (Previously Added) A programmable slow-cooker appliance as described in claim 34 wherein said control panel includes a user interface located on an inclined front surface of said housing spaced away from said outer sidewall of said heating unit.

748. (Previously Added) A programmable slow-cooker appliance as described in claim 39 wherein said lower and upper vents are positioned to allow air to circulate behind said control panel and assist in the dissipation of heat from said programmable circuit.

841. (Currently Amended) A programmable slow-cooker appliance as described in claim 39 wherein said housing is comprised of a shield and a housing portion, said shield being interposed between and adjoining said outer sidewall of heating unit and said housing portion, said control panel being incorporated on said housing portion.

942. (Previously Added) A programmable slow-cooker appliance as described in claim 41 wherein said upper and lower vents are in said housing portion.

1043. (Previously Added) A programmable slow cooker appliance as described in claim 42 wherein said housing is comprised of a thermoplastic material.

WB 002479

Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 5 of 21

U 44. (Currently Amended) A programmable slow-cooker appliance as described in claim 34 including a ceramic wherein said cooking unit is made from a ceramic material and is removably positioned in said well-like chamber.

12 45. (Currently Amended) A programmable slow-cooker appliance comprising:  
a heating unit including a bottom and a continuous sidewall extending from said bottom, said bottom and said continuous sidewall defining a well-like chamber, ~~said continuous sidewall including an outer sidewall and an interior sidewall;~~  
a heating element mounted to said heating unit for providing heat to said well-like chamber and disposed between said outer sidewall and said interior sidewall;  
a ceramic cooking unit removably positioned in said well-like chamber;  
a non-conductive housing fixedly mounted to and projecting outside said continuous sidewall of said heating unit;  
a programmable circuit positioned within said housing and electrically connected to said heating element to electronically control and program cooking cycles and temperature;  
means including vents in said housing for cooling said programmable circuit by convecting heat away therefrom; and  
a control panel mounted to said housing and electrically connected to said programmable circuit.

WB 002480

Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 6 of 21

<sup>13</sup>  
<sup>46</sup> (Previously Added) A programmable slow-cooker appliance as described in  
<sup>12</sup> claim 45 wherein said programmable circuit includes a microprocessor controller.

<sup>14</sup>  
<sup>47</sup> (Currently Amended) A programmable slow-cooker appliance as described in  
<sup>13</sup> claim 46 wherein said housing is comprised of a shield and a housing portion, said shield  
being interposed between and adjoining said sidewall of said heating unit and said housing  
portion, said control panel being incorporated on said housing portion.

<sup>15</sup>  
<sup>48</sup> (Previously Added) A programmable slow-cooker appliance as described in  
<sup>12</sup> claim 45 including means for automatically switching said heating element from a cook mode  
to a warm mode.

<sup>14</sup>  
<sup>49</sup> (Previously Added) A programmable slow-cooker appliance as described in  
<sup>15</sup> claim 48 including a Triac electrically connected between said programmable circuit and said  
heating element.

<sup>17</sup>  
<sup>50</sup> (Previously Added) A programmable slow-cooker appliance as described in  
<sup>14</sup> claim 49 including a heat sink positioned within said housing, said Triac including a heat sink  
tab in thermal contact with said heat sink.

WB 002481

Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 7 of 21

1851.  
12 (Previously Added) A programmable slow-cooker appliance as described in claim 45 wherein said means for cooking includes a lower vent in said housing for admitting relatively cool air to said housing and an upper vent in said housing for allowing the escape of relatively warm air from said housing.

1951.  
12 (Currently Amended) A programmable slow-cooker appliance as described in claim 45 wherein ~~said cooking unit is made from a ceramic material~~ wherein said programmable circuit is configured to switch said heating element from a cooking mode to a warming mode at the expiration of a set cooking time.

2051.  
51 (Currently Amended) A programmable slow-cooker appliance comprising:  
a heating unit including a bottom and a continuous sidewall extending from said bottom, said bottom and said continuous sidewall defining a well-like chamber, said continuous sidewall including an outer sidewall and an interior sidewall;  
a heating element mounted to said heating unit and disposed between said outer sidewall and said interior sidewall;  
a housing fixedly mounted to and projecting outside said continuous sidewall of said heating unit;  
a programmable circuit positioned within said housing including means for automatically switching and configured to automatically switch said heating element from a cook mode to a lower temperature warm mode at the end of a set cooking time;

WB 002482

Highly Confidential  
Attorneys' Eyes Only

22

D

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 8 of 21

means a control panel mounted to said housing and including a user interface  
connected to said programmable circuit for selecting a cooking temperature and cooking  
time; and

means for ventilating said housing; and  
a cooking unit removably positioned in said well-like chamber.

91  
21 20 54. (Currently Amended) A programmable slow-cooker appliance as described in  
claim 53 wherein said housing includes a plurality of vent openings, a thermoplastic shield  
and a housing portion, said shield being disposed between and adjoining said outer sidewall  
of said heating unit and said housing portion, said housing portion including a control panel.

22  
21 56. (Previously Added) A programmable slow-cooker appliance as described in  
claim 54 including a heat sink positioned within said housing.

23  
22 57. (Previously Added) A programmable slow-cooker appliance as described in  
claim 55 including a Triac positioned within said housing and electrically connected between  
said programmable circuit and said heating element, said Triac being in thermal contact with  
said heat sink.

24  
21 58. (Currently Amended) A programmable slow-cooker appliance as described in  
claim 53 wherein said housing is comprised of a thermoplastic material and said cooking unit

WB 002483

23  
Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 9 of 21

is comprised of a ceramic material, said cooking unit being removably positioned in said well-like chamber.

25  
58  
21 (Previously Added) A programmable slow-cooker appliance as described in claim 54 wherein said housing is comprised of a thermoplastic material and said cooking unit is comprised of a ceramic material.

26  
59 (New) A programmable slow-cooker appliance as described in claim 53 wherein said programmable circuit is configured such that a user cannot initially set a lower temperature warm mode. 20

27  
60 (New) A programmable slow-cooker appliance as described in claim 53 including a switch operatively associated with said control panel, said programmable circuit being configured such that subsequent pushes of said switch activates different cook modes. 20

28  
61 (New) A programmable slow-cooker as described in claim 60 wherein said housing is vented. 27

29  
62 (New) A programmable slow-cooker appliance as described in claim 53 wherein said housing includes a thermoplastic portion adjoining and extending into said continuous sidewall of said heating unit. 20

WB 002484

Highly Confidential  
Attorneys' Eyes Only

84

8

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 10 of 21

30  
68. (New) A programmable slow-cooker appliance as described in claim 53<sup>20</sup> wherein said circuit is configured to default to cause operation of said appliance at a cooking temperature when plugged into a power source.

31  
64. (New) A slow-cooker appliance comprising:  
a heating unit including a bottom and a sidewall defining a well-like heating chamber and a heating element for providing heat to said heating chamber;  
a ceramic cooking unit including a bottom, a continuous sidewall upstanding from said bottom, and a lip extending outwardly from said sidewall, said cooking unit being dimensioned to be at least partially received within said well-like heating chamber and supported by engagement of said lip with said heating unit;  
a housing assembly mounted to and projecting outwardly from said sidewall of said heating unit, said housing assembly including a thermoplastic portion adjoining said outer sidewall, an inclined front surface including a control panel having a user interface, and a vent opening; and  
a programmable circuit positioned within said housing assembly, said user interface being connected to said programmable circuit for selecting cooking temperature and cooking time, said programmable circuit being configured to automatically switch said heating element from a cook mode to a lower temperature warm mode at the end of a set cooking time.

WB 002485

Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 11 of 21

<sup>31</sup>  
~~32~~<sub>66</sub>. (New) A slow-cooker appliance as described in claim ~~64~~ wherein said thermoplastic portion of said housing assembly extends into said sidewall of said heating unit.

<sup>31</sup>  
~~33~~<sub>66</sub>. (New) A slow-cooker appliance as described in claim ~~64~~ wherein said housing assembly includes a bottom wall including a plurality of vent openings.

<sup>33</sup>  
~~34~~<sub>66</sub>. (New) A slow-cooker appliance as described in claim ~~66~~ wherein said housing assembly includes a plurality of upper vent openings such that heat is convected away from said programmable circuit as air flows into said housing assembly through said vent openings in said bottom wall, through said housing assembly, and out of said housing assembly through said upper vent openings.

<sup>31</sup>  
~~35~~<sub>66</sub>. (New) A slow-cooker appliance as described in claim ~~64~~ including a switch operatively associated with said control panel, said programmable circuit being configured such that subsequent pushes of said switch activates different cook modes.

<sup>31</sup>  
~~36~~<sub>66</sub>. (New) A slow-cooker appliance as described in claim ~~64~~ wherein said circuit is configured to default to cause operation of said appliance at a cooking temperature when plugged into a power source.

WB 002486

Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 12 of 21

37/ (New) A programmable slow-cooker appliance comprising:  
a heating unit including a bottom and a continuous sidewall defining a well-like heating chamber and a heating element positioned for providing heat to said well-like heating chamber;  
a cooking unit including a lip and adapted to fit at least partially within said heating unit such that said lip engages a top portion of said heating unit;  
a housing assembly mounted to and projecting from said sidewall of said heating unit, said housing assembly including a thermoplastic portion adjoining said sidewall of said heating unit, a bottom wall adjoining said sidewall, and an inclined front surface including a control panel user interface spaced from said sidewall; and  
a circuit including a programmable controller positioned within said housing assembly and operatively associated with said user interface, said circuit being configured to allow a user to set both cooking temperature and cooking time and to cause said heating element to operate in a warm mode at the expiration of a set cooking time, said control panel being electronically connected to said circuit.

38/ 37/ (New) A programmable slow-cooker appliance as described in claim 37 wherein said circuit is incorporated on a printed circuit board and a heat sink is positioned in said housing assembly between said printed circuit board and said control panel user interface.

WB 002487

Highly Confidential  
Attorneys' Eyes Only

27

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 13 of 21

39/72. (New) A programmable slow-cooker appliance as described in claim 70<sup>37</sup>  
wherein said bottom wall of said housing assembly is vented.

40/73. (New) A programmable slow-cooker appliance as described in claim 72<sup>39</sup>  
wherein said housing assembly includes an upper vent opening positioned such that, when  
operated, relatively cool air enters said housing assembly through said vented bottom wall,  
passes over said circuit, and relatively warm air exits said housing assembly through said  
upper vent opening.

41/74. (New) A programmable slow-cooker appliance as described in claim 70<sup>37</sup>  
wherein said circuit is configured to default to cause operation of said appliance at a cooking  
temperature when plugged into a power source.

42/75. (New) A programmable slow-cooker appliance as described in claim 74<sup>41</sup>  
including a switch operatively associated with said control panel such that subsequent pushes  
of said switch activates different cooking times and temperatures.

WB 002488

Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 14 of 21

**REMARKS**

Reconsideration of the above-referenced patent application is respectfully requested.

Claims 34-75 are now pending in this application. Independent claims 34, 45 and 53 have been amended. Marked up copies of these claims with additions underlined are attached. New dependent claims 58-63 have been added. Support for these claims is found at page 11, line 13 (claim 58); page 10, lines 29-30 (claim 59); page 7, lines 16-23 (claim 60); page 7, lines 16-23 (claim 61); page 7, lines 12-15 (claim 62); and page 11, lines 19-20 (claims 63, 69, and 74), respectively. Two new independent claims 64 and 70 have been added. Claims 65-69 are dependent on claim 64. These claims are also fully supported by the patent specification and drawings. Claims 71-75 depend on claim 70.

Claims 34-58 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,904,852 to Rivelli et al. ("Rivelli") in view of either U.S. Patent No. 5,477,029 to Skutt et al. ("Skutt") or U.S. Patent No. 5,539,185 to Polster ("Polster"). The rejection is respectfully traversed as there is no suggestion in the prior art to combine these references. Moreover, even if the references were combinable, the combination does not yield the claimed invention of the independent claims.

Rivelli discloses a fat fryer including one or more computer modules 26 that extend within a panel 16. Each module 26 includes a printed circuit board 42 spaced from a chassis

WB 002489

**Highly Confidential  
Attorneys' Eyes Only**

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 15 of 21

28 and within side covers 30 and a face plate 32. The panel 16 include slotted openings 24 for releasing warm air. Insulation 58,64 and a dead air compartment 54 protect the module 26 from excessive heat as described at col. 4, lines 40-61. The patent indicates that openings communicating with the compartment 54 can be provided in the side covers 30.

Skutt discloses a kiln for firing pottery or ceramics having a control box 36 including a control panel 98. Louvers 100, 106 are provided for allowing convective air flow within the control box.

Polster discloses a food cooker/rethermalizer in which food is placed in a wire rack 40 having fluid conducting tubes 50, as shown in Fig. 2 of the patent. A heater 80 is bonded to the bottom wall 34 and lower side walls of a heater vessel 30 that contains the rack 40. A controller 1 including a control panel 100 is used to allow different food products having different cooking requirements to be cooked at the same time. A control chamber 24 is isolated from a heating chamber 22 by wall 22a, 24a defining a space 26. Convection flow is provided by openings 26a, 26b in the space, thereby cooling the wall 24a of the control chamber. Vents 20e, 20f are provided in the control chamber so that it is flushed with ambient air.

First addressing the proposed combination of Rivelli and Skutt, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that

WB 002490

Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
 Application Serial No.: 10/386,276  
 Filing Date: March 11, 2003  
 Docket No.: 717-675 CON  
Page 16 of 21

was made by the applicant. In re Kotzab, 55 U.S.P.Q.2d 1313, 1316 (Fed. Cir. 2000). There is no motivation to combine a cooking implement with a ceramic kiln. Even if combined, the combination does not yield a slow cooker as described in any of the independent claims. Slow cookers are understood as having heating units with well-like chambers and cooking units extending within the chambers. The cooking units are often ceramic to provide even heating, and are preferably removably positioned in the chamber. Slow cookers are also understood as designed for cooking food at relatively low cooking temperatures for a relatively long period of time, such as four to ten hours. Claims 34 and 53, though already specifying a slow-cooker appliance, have been further amended to include elements that characterize slow cookers. Claim 45 as filed describes both a well-like chamber and cooking unit. The new claims also clearly describe slow cookers.

Though concerned with protecting solid state components from overheating, Rivelli's solution does not have applicability to slow cookers. As discussed at col. 2, lines 28-33, Rivelli provides a dead air space compartment 54 within the cooker console housing. The module 26 housing the circuit board is mounted within the compartment rather than projecting from an outer sidewall as described in the independent claims of the present application. It is clear that, when considered as a whole, the structure disclosed by Rivelli has no applicability to slow cookers. Skutt takes a completely different approach than Rivelli as described above, providing electronic controls 86 within a chimney 80. The provision of a chimney-like structure in Rivelli would likely involve causing convection flow in the dead air

WB 002491

Highly Confidential  
 Attorneys' Eyes Only

Applicant: DeCobert, et al.  
 Application Serial No.: 10/386,276  
 Filing Date: March 11, 2003  
 Docket No.: 717-675 CON  
Page 17 of 21

space in which the module 26 is positioned, which is contrary to the teachings of Rivelli.  
 Claims 34 and 45 should accordingly be patentable over this combination of references.

20

31 37

Claim 53 as amended and new independent claims 64 and 70 are directed to slow cookers that are caused to automatically switch from a cook mode to a lower temperature warm mode at the end of a set cooking time. Ventilation of the housing for the programmable circuit is not an element of claims 53 or 70, though a vent is required is dependent claims 54, 61, 72, and 73. New claim 64 recites a vent opening in the housing assembly, while dependent claims 66 and 67 recite additional elements relating to further openings in the housing assembly. Claim 67 also concerns convection cooling of the programmable circuit. Neither Rivelli nor Skutt provide for the automatic switching of a slow cooker to a warm mode following a cooking cycle. As discussed above, neither reference concerns a slow cooker. Claims 64 and 70 further require elements such as a cooking unit with a lip. Such elements are common to slow cookers though not the cited art. A housing assembly with a thermoplastic portion is also recited in claims 64 and 70. New claim 59 is directed to a feature that prevents the "warm" mode from being an initial setting. The initial setting will accordingly be a cooking mode. The user accordingly will not tend to inadvertently set the slow cooker to a temperature that is not adequate for cooking. Neither Rivelli nor Skutt discloses or suggests the subject matter of claim 59. New claims 60, 68, and 75 require a programmable circuit that causes the actuation of different cooking modes upon subsequent pushes of a switch. New claims 63, 69, and 74 relate to a default feature whereby

WB 002492

Highly Confidential  
 Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 18 of 21

the slow cooker is set to a cooking temperature when plugged in. Such a feature is not disclosed in the art of record, and also helps prevent inadvertent attempts to cook at a "warming" temperature. The Examiner is respectfully requested to withdraw the rejection of claims 34-58 as unpatentable over Rivelli in view of Skutt. Favorable consideration of the new claims is respectfully requested

The combination of Rivelli and Polster also would not lead one of skill in the art to the inventions described in claims 34, 45, 53, 64, and 70. First, neither reference is directed to a slow cooker. The Polster apparatus is designed to provide fluid flow action over food packages. A designer of slow cookers would not look to devices for cooking packaged food for improving slow cookers. Second, the technique for cooling the electronic control chamber in Polster (flushing with ambient air) would not be compatible with the Rivelli fryer apparatus. With respect to claims 53, 64, and 70 and the claims dependent thereon, there is no suggestion to provide a warming mode following a cooking mode in a slow cooker as recited. There is also no suggestion to default to a cooking temperature when the appliance is plugged in, as recited in claims 63, 69, and 74, or to prevent initially setting the appliance to a warming temperature as recited in claim 59.

Claim 41 as well as several other dependent claims (e.g. claims 35, 47, 54) call for a shield. The Examiner has indicated that elements 56, 58 of the Rivelli apparatus functions as a shield. Claims 35, 41, 47, and 54 have been amended to describe the shield as adjoining

WB 002493

Highly Confidential  
Attorneys' Eyes Only

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 19 of 21

both the sidewall of the heating unit and the housing. Members 56, 58 of the Rivelli device do not adjoin a heating unit.

An Information Disclosure Statement and a Supplemental Information Disclosure Statement were filed August 11, 2003 and August 21, 2003, respectively. They were filed without a fee as the undersigned attorney was not aware that an action had been issued. An Information Disclosure Statement is accordingly submitted with the appropriate fee and enclosing all the references previously submitted and additional references that have come to the attention of Applicants. One of the submitted reference, U.S. Patent No. 6,362,459 to Schmidt, discloses an electronically controlled roaster. The roaster includes a digital control assembly that is fastened to the bottom of a base. Slotted openings are provided to provide airflow through the control assembly. The "Background" section of the Schmidt patent describes various electric cooking appliances, including slow cookers. This section also states that the cooking temperature of most such appliances, if controlled at all, is controlled with a knob on the front of the appliance. The patentee further recognizes the problem of locating electronics in close proximity to a cooking appliance, and the fact that they must be kept cool enough to prevent failures.

Schmidt takes a somewhat different approach to addressing the problem of maintaining the electronic controls at an acceptable temperature than that described in claims 34 and 45. A recess is formed in the bottom of the appliance, and the housing for the PC

WB 002494

Highly Confidential  
Attorneys' Eyes Only

5

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 20 of 21

board is positioned in the recess. The housing is fastened to the bottom wall of the appliance. Such a recess is unnecessary in the Applicant's appliance where the housing for the electronics is mounted to the sidewall of the heating unit rather than beneath it. It is further noted that the Schmidt appliance shuts off after the cooking time has elapsed rather than switching to a warming mode.

The Schmidt patent has a filing date of January 12, 2001. The present application is a continuation of application no. 09/802,174 (now U.S. Patent No. 6,573,483), which in turn claims priority of provisional application no. 60/189,443 filed March 15, 2000 and 60/196,273 filed April 5, 2000. All of the independent claims are supported by provisional application no. 60/189,443, which predates the filing of the application that matured as the Schmidt '459 patent. The disclosure contained in application no. 60/196,273 is clearly enabling with respect to the claimed subject matter. A copy of this provisional application is provided for the Examiner's convenience.

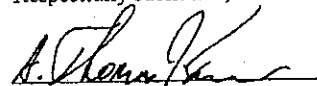
WB 002495

**Highly Confidential  
Attorneys' Eyes Only**

Applicant: DeCobert, et al.  
Application Serial No.: 10/386,276  
Filing Date: March 11, 2003  
Docket No.: 717-675 CON  
Page 21 of 21

In summary, the rejection of the claims under 35 U.S.C. §103 should now be overcome. A Notice of Allowance is respectfully requested with respect to claims 34-75.

Respectfully submitted,



A. Thomas Kammer  
Registration No.: 28,226  
Attorney for Applicant(s)

HOFFMANN & BARON, LLP  
6900 Jericho Turnpike  
Syosset, New York 11791  
(516) 822-3550  
ATK:jlw  
180460\_1

WB 002496

**Highly Confidential  
Attorneys' Eyes Only**



**SELECTED  
PRIOR ART**

**WB 002497**

**Highly Confidential  
Attorneys' Eyes Only**



US006196113B1

(12) **United States Patent**  
Yung

(10) Patent No.: **US 6,196,113 B1**  
(45) Date of Patent: **Mar. 6, 2001**

(54) **FOOD APPLIANCE AND A CODING SYSTEM THEREFOR**

(76) Inventor: **Simon K. C. Yung**, 6 Purves Road, Jardine's Lookout (HK)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

5,317,134 5/1994 Edamura .  
5,392,695 \* 2/1995 Junkel ..... 99/328  
5,415,081 \* 5/1995 Yoshida et al. .... 99/326  
5,421,713 \* 6/1995 Backus et al. .... 99/348 X  
5,433,139 \* 7/1995 Kitagawa et al. .... 99/327  
5,445,061 \* 8/1995 Barnadas ..... 99/340  
5,463,936 11/1995 Clark et al. .  
5,600,711 2/1997 Yuen .  
5,619,614 \* 4/1997 Payne et al. .... 99/327  
5,829,341 11/1998 Lin .

(21) Appl. No.: 09/385,162

(22) Filed: **Aug. 30, 1999**

#### FOREIGN PATENT DOCUMENTS

29800496 9/1998 (DE) .  
0818942 1/1998 (EP) .  
WO96/16550 6/1996 (WO) .

#### Related U.S. Application Data

(60) Division of application No. 09/061,296, filed on Apr. 16, 1998, now Pat. No. 5,967,021, which is a continuation-in-part of application No. 08/915,654, filed on Aug. 21, 1997, now Pat. No. 5,794,521, which is a continuation of application No. 08/346,432, filed on Nov. 29, 1994, now Pat. No. 5,704,277.

(51) Int. Cl.<sup>7</sup> ..... A21B 1/00; A21D 8/00; A47J 27/00; A47J 37/01  
(52) U.S. Cl. .... 99/327; 99/348; 99/468; 366/144; 366/146; 366/314  
(58) Field of Search ..... 99/325-335, 348, 99/467, 468, 483, 484, 486; 366/69, 96-98, 144-146, 149, 341, 314, 601; 426/504, 512

(56) **References Cited**

#### U.S. PATENT DOCUMENTS

4,234,605 \* 11/1980 Takeuchi ..... 426/18  
4,550,653 \* 11/1985 Hedenberg ..... 99/348  
4,781,933 \* 11/1988 Fraioli ..... 426/242  
4,803,086 \* 2/1989 Hedenberg ..... 426/87  
4,841,125 6/1989 Edamura .  
4,984,512 \* 1/1991 Takahashi et al. .... 99/327  
5,076,153 \* 12/1991 Takahashi et al. .... 99/327  
5,267,211 11/1993 Kobayashi et al. .  
5,280,150 \* 1/1994 Arai et al. .... 99/348 X

\* cited by examiner

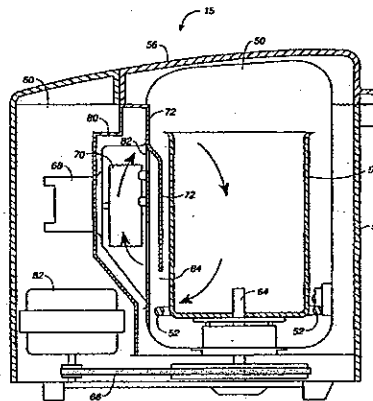
Primary Examiner—Timothy Simone

(74) Attorney, Agent, or Firm—Majestic, Parsons, Stebert & Hsue P.C.

#### ABSTRACT

A versatile food appliance includes a set of hardware components common to a plurality of single-purpose food appliances. The set of hardware components is controlled by a microcontroller executing a program from a repertoire thereof stored in the general-purpose food appliance. Many processing programs are stored for operating the appliance in different modes and for processing different kinds of food by using different ingredients. Each processing program is assigned a code and can be selected by specifying the code associated with it from a control panel. The programs may be further modified parametrically by a group of process parameters. Ingredients to be used in each of the programs may be in a premixed form in a package with the code optionally labeled thereon. The repertoire of programs is updatable by the user. In the preferred embodiment, a memory card interface allows updated programs to be introduced via a removable flash memory card.

31 Claims, 7 Drawing Sheets



WB 002498

**Highly Confidential**  
**Attorneys' Eyes Only**



U.S. Patent

Mar. 6, 2001

Sheet 2 of 7

US 6,196,113 B1

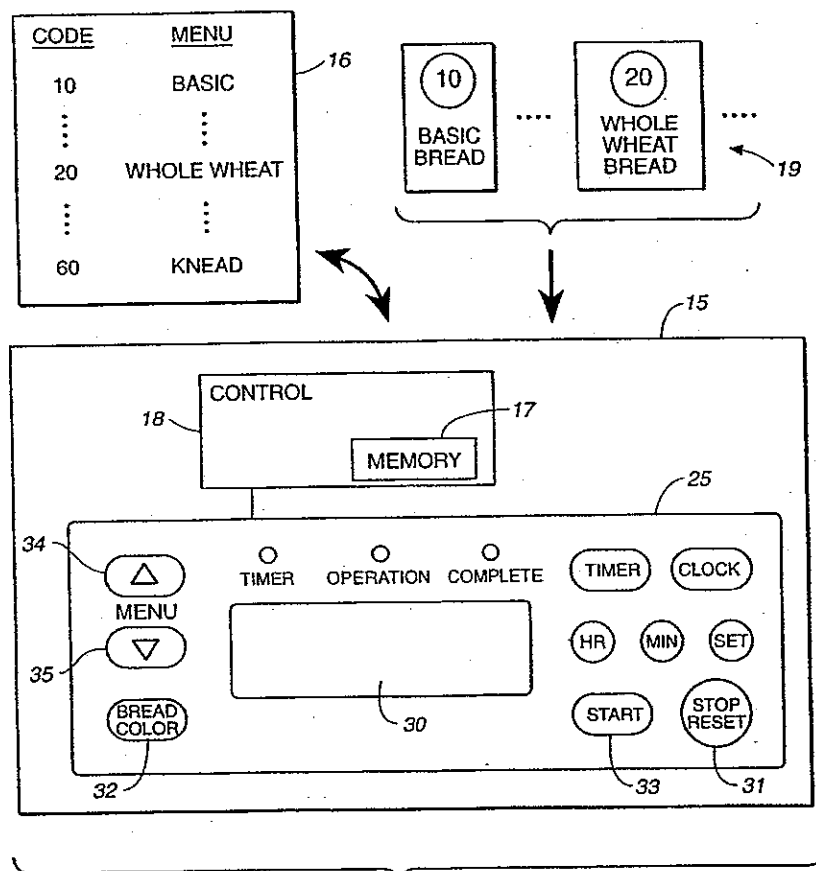


FIG. 2

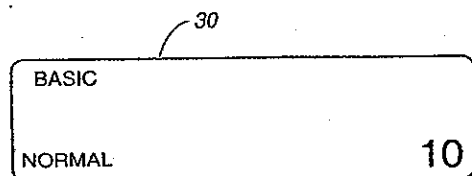


FIG. 4

WB 002500

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Mar. 6, 2001

Sheet 3 of 7

US 6,196,113 B1

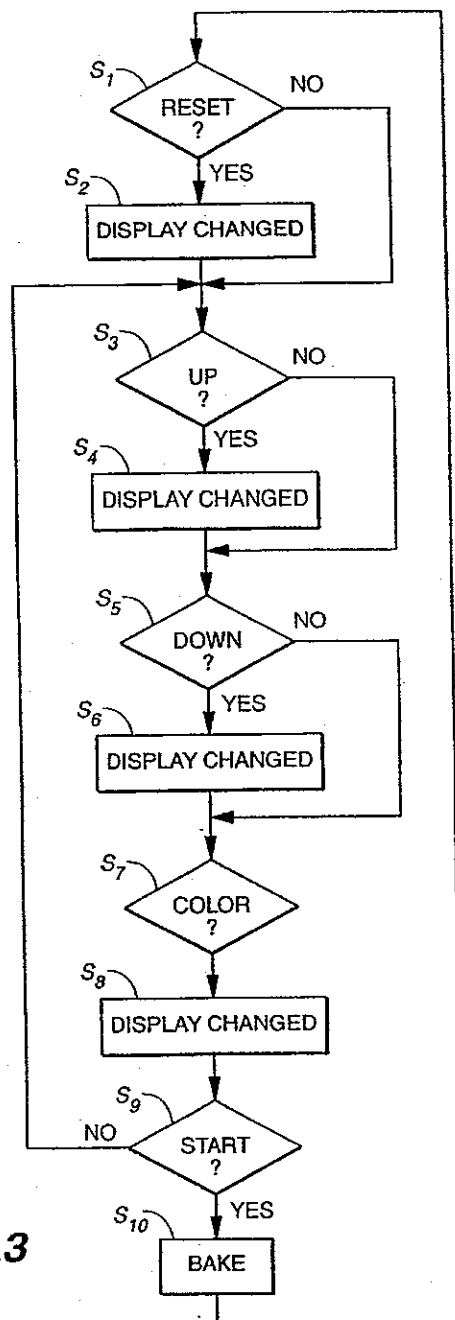


FIG. 3

WB 002501

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Mar. 6, 2001

Sheet 4 of 7

US 6,196,113 B1

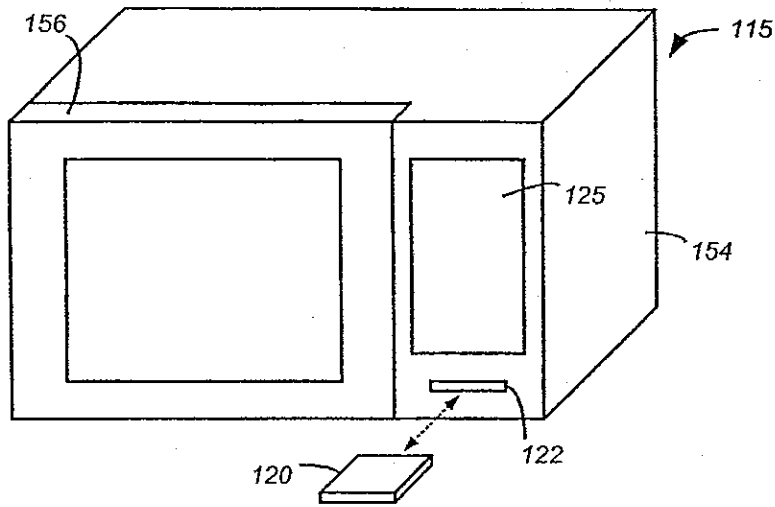


FIG. 5A

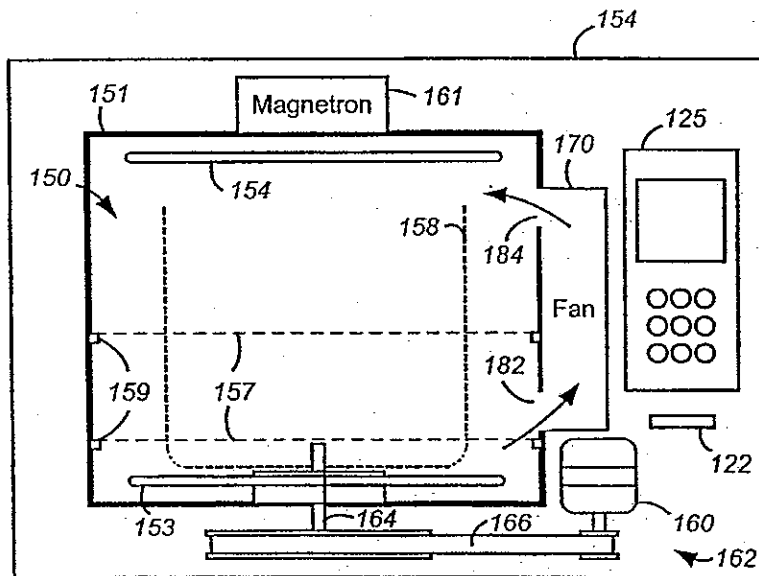


FIG. 5B

WB 002502

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Mar. 6, 2001

Sheet 5 of 7

US 6,196,113 B1

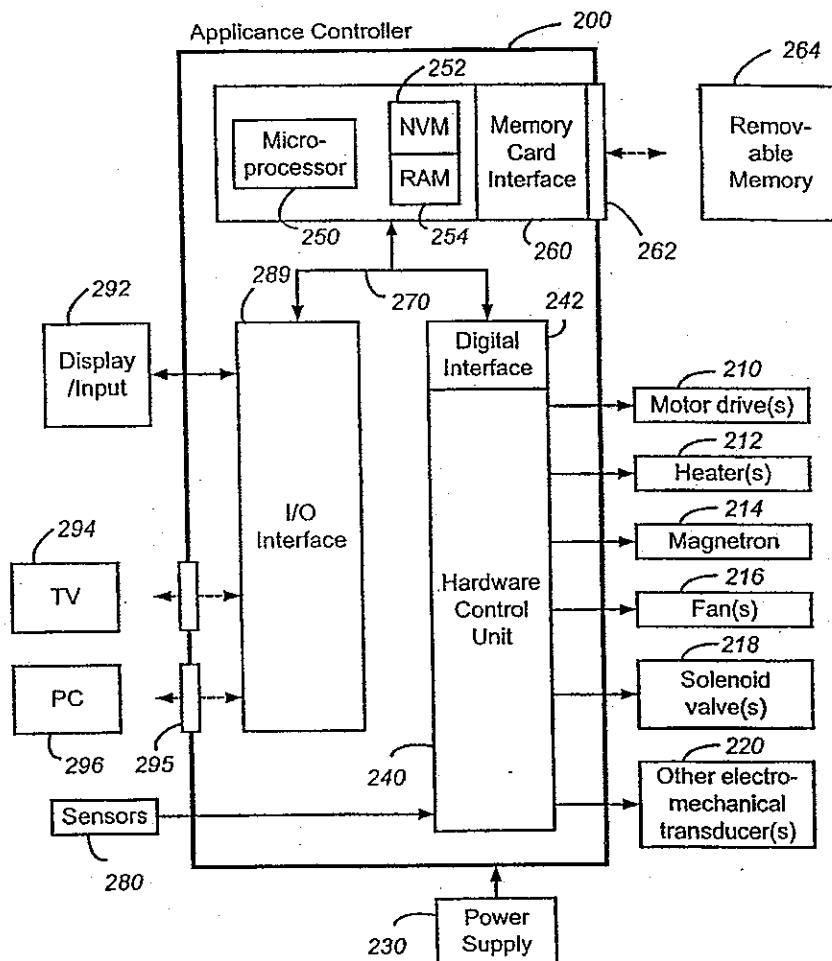


FIG. 6

WB 002503

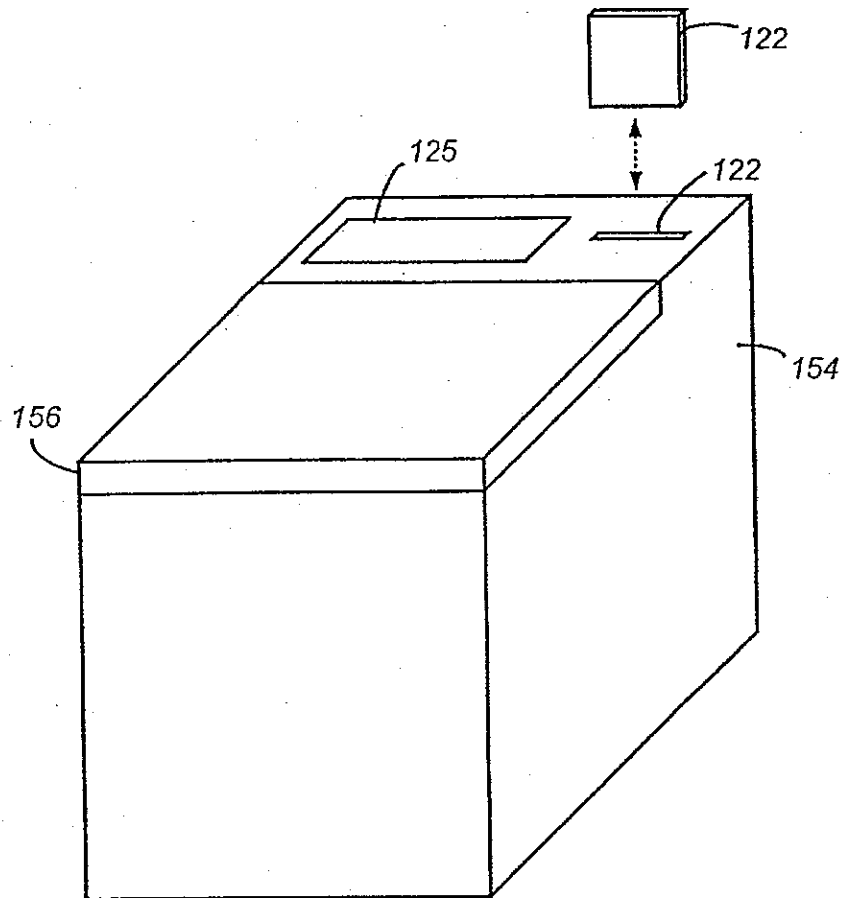
Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Mar. 6, 2001

Sheet 6 of 7

US 6,196,113 B1



**FIG. 7**

WB 002504

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Mar. 6, 2001

Sheet 7 of 7

US 6,196,113 B1

316

Parameter Code	Process Parameter Configuration	Description	...
520	(5, 120, 20, ...)	Light	...
.	.	.	.
.	.	.	.
530	(5, 130, 20, ...)	Medium	...
.	.	.	.
.	.	.	.
540	(5, 140, 20, ...)	Brown	...
.	.	.	.
.	.	.	.

FIG. 8

<u>CODE</u>	<u>MENU</u>
10520	BASIC - Light
10530	BASIC - Medium
10540	BASIC - Brown
.	.
.	.
20520	WHOLE WHEAT - Light
.	.
.	.
60430	KNEAD
.	.

FIG. 9

WB 002505

Highly Confidential  
Attorneys' Eyes Only

US 6,196,113 B1

1

# FOOD APPLIANCE AND A CODING SYSTEM THEREFOR

This is a division of U.S. patent application Ser. No. 09/061,296, filed Apr. 16, 1998, now U.S. Pat. No. 5,967,021, which is a continuation-in-part of U.S. patent application Ser. No. 08/915,654, filed Aug. 21, 1997, now U.S. Pat. No. 5,794,521 which is a continuation of U.S. patent application Ser. No. 08/346,432, filed Nov. 29, 1994, now U.S. Pat. No. 5,704,277.

## FIELD OF INVENTION

This invention relates to an improved food appliance and, more particular, to a versatile food appliance having a coding system for program-control and including features for program updates that can be effected by an end-user.

## BACKGROUND OF THE INVENTION

One embodiment of a food appliance in the form of a breadmaker with coding system has been disclosed in U.S. Pat. No. 5,704,277. The program-controlled machine operates according to one of a plurality of provided specified programs by receiving materials required in the specified program such as ingredients of a selected kind of bread to be baked.

Breadmakers of the type comprising a baking chamber containing an electric heater at the bottom, a baking pan which is a container to be set inside the baking chamber for receiving ingredients therein, a stirrer for stirring and kneading the ingredients inside the baking pan and a motor for rotating the stirrer in a specified manner, have been known.

Breadmakers of the type storing a plurality of programs and allowing a user to select one of them for baking a desired kind of bread have also been known. These programs generally include many complicated steps such as mixing selected ingredients and controlling the baking temperature. With some prior art breadmakers, the user is required to read a cookbook carefully to ascertain the necessary steps before setting an appropriate program.

Some breadmakers are preprogrammed, and the user has only to specify the desired kind of bread to be baked, the breadmaker automatically carrying out the program associated with the specified kind of bread.

For allowing the user to specify the kind of bread to be baked, some breadmakers are designed to display, as power is switched on, the types of bread that can be specified. An indicator is initially displayed at a default position, say, next to the name of the most commonly selected kind of bread, and the user operates a SELECT button until the indicator moves one position at a time to finally reach a position next to the desired kind of bread.

Alternatively, the breadmaker may be provided with as many push buttons as the number of different kinds of bread that can be baked thereby, and the user is required to push the button corresponding to the desired kind of bread. With prior art breadmakers, therefore, the number of programs from which the user can select one is limited because the screen of the display device is not large and the control panel of the machine cannot accommodate too many buttons.

With prior art breadmakers, furthermore, the user must carefully add the required ingredients such as flour, sugar, salt and yeast. In other words, prior art breadmakers are not energy-efficient and are difficult to use and the choice of different kinds of bread that can be baked thereby cannot be increased significantly.

2

Prior art breadmakers and other program-controlled appliances have a limited set of preset programs they can operate on. That is, the repertoire of programs that can be executed by a breadmaker or a similar appliance is fixed at the factory. If a new recipe calls for a different process, the user can at best approximate it by selecting the closest existing preset program. In most cases, the user will have to purchase newer models of the machine in order to have the newer features and processes.

Furthermore, prior art food processing machines tend to be task-specific and single-purpose. For example, a breadmaker is dedicated to making bread, a rice cooker for cooking rice, a rotisserie for roasting, a regular oven or a microwave oven or a convection oven for either general-purpose or specific kind of baking, toasting and broiling, etc.

## SUMMARY OF THE INVENTION

It is a general object of the invention to provide a versatile food appliance with updatable program control for replacing a plurality of dedicated appliances.

It is another object of the invention to provide a food appliance with a coding system in which a new recipe or a premixed package of ingredients can be associated with a predefined program.

It is another object of the invention to provide a food appliance having a repertoire of programs capable of being updated in the field by a user.

It is another object of the invention to provide a new coding system for a program-controlled machine such as a breadmaker or other food appliance which allows a user to select one from a larger number of different kind of products and to cause the machine to operate automatically on a program appropriate for the selected product.

It is still another object of the invention to provide such a coding system with which the user is less likely to make an error in providing ingredients for the specified product.

It is still another object of the invention to provide a versatile food appliance capable of operating as a breadmaker or other dedicated machine and which is equipped with such an improved coding system.

It is still another object of the invention to provide a food appliance which can efficiently store a large number of programs.

An improved breadmaker embodying the present invention, with which the above and other objects can be achieved, may be characterized as being like a prior art breadmaker comprising a baking chamber having a heater therein, a baking pan adapted to receive ingredients therein and be set inside the baking chamber, a stirrer for stirring and kneading the ingredient inside the baking pan and a motor for rotating the stirrer in a specified manner, and also comprising an air-circulating means such as a centrifugal fan for causing the air inside the baking chamber to move upward through the fan and to circulate downward around the baking pan.

A coding system embodying the invention, with which the above and other objects can be accomplished, may be characterized as being associated with a machine adapted to carry out selectively any of a plurality of tasks according to a program and by using specific materials both associated with the selected task. An example of such machines is a breadmaker programmed to make different kinds of bread by using different mixtures of ingredients. Each of the products that can be obtained by such a machine is assigned a different code, and a table, serving as an indexing means, is

WB 002506

Highly Confidential  
Attorneys' Eyes Only

US 6,196,113 B1

3

provided to show what code has been assigned to each of the products that can be made or processed by the machine, and a user specifies the product to be obtained or processed by inputting the corresponding code. The materials to be used by the machine for making a product of the specified kind or carrying out a specified process may be provided in the form of a premixed package with the corresponding code clearly printed thereon such that the user is spared of the trouble of mixing the required ingredients himself/herself. The user may specify the code corresponding to the desired product by directly forming it on numeric or alphanumeric keys, or by causing available codes to appear sequentially on a display device one by one and pressing a process-starting button when the code corresponding to the desired product or process is displayed.

One feature of the invention allows a food appliance to run additional new programs outside its existing repertoire. This is accomplished by providing facility for a user to transfer new programs to the food appliance.

In one embodiment, the new programs or updates are transferred via a standard data port, such as a parallel port, or a serial port, or an infrared port provided with the food appliance.

In another embodiment, the new programs or updates are transferred via a memory port which is able to receive a removable memory card.

Another feature of the invention incorporates multiple functions into a versatile appliance operating under the control of programs which are updatable. In this way, one versatile machine or appliance can replace several dedicated machines. This is accomplished by incorporating in the versatile appliance the hardware components common to a plurality of dedicated food machines.

An economy of scale is achieved since the different dedicated food machines have many components in common. When only the common denominators of these components are included in the versatile food appliance, duplication is avoided.

Another advantage is that with the multiple function capability of the food appliance, there exists synergy and sophistication of processing that are not possible in conventional dedicated appliances. Since the versatile food appliance is capable of a rich set of functionalities, it is particularly useful to provide the facility for programs updates even after the food appliance leaves the factory.

Another feature of the invention is to provide a food appliance running programs that allow portions thereof to be modified by a group of parameters. This is accomplished by having the program execution responsive to a group of process parameters. In this way, the repertoire of the food appliance may be greatly increased without having inefficiently to store many similar programs which may only differ in some minor respect.

In one embodiment, a code from the coding system described above is used to identify a given program operating with a given set of values assigned to an associated group of process parameters.

In another embodiment, a set of predetermined permutations of values for the process parameters (i.e., a set of process parameter configurations) are coded. In this way, a user need only enter a program code to call up a desired program and enter a parameter code to specify a desired process parameter configuration from the predetermined set.

In another embodiment, the group of process parameters can be specified by a user by entering a desired value for

4

each process parameter. For example, all things being equal, the user can modify the duration or temperature of one or more cycles of the program.

The accompanying drawings, which are incorporated in and form a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional side view of a breadmaker embodying the present invention;

FIG. 2 is a schematic of a coding system embodying the invention as incorporated in a breadmaker;

FIG. 3 is a flow chart of the operation by the control means for the coding system of FIG. 2;

FIG. 4 is an example of display on the display device of FIG. 2 after reset;

FIG. 5A illustrates one embodiment of the versatile food appliance with removable memory;

FIG. 5B is a sectional view of the embodiment shown in FIG. 5A;

FIG. 6 is a schematic block diagram of the versatile food appliance, according to a preferred embodiment of the invention;

FIG. 7 illustrates another embodiment of the versatile food appliance with removable memory;

FIG. 8 illustrates schematically an example lookup table for process parameter configurations; and

FIG. 9 illustrates a table where a single code represents one combination of a parametric program and a process parameter configuration, according to a preferred embodiment.

#### DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 shows a breadmaker 15 embodying the present invention, including components which are commonly known with reference to prior art breadmakers of a similar type. A baking chamber 50 containing an electric heater 52 near the bottom is formed inside a housing structure 54. The housing structure 54 is provided with a lid 56 which can be opened such that a baking pan 58 for receiving bread ingredients therein can be removably set inside the baking chamber 50. Adjacent to but separated by a chamber-separating wall 80 from the baking chamber 50 inside the housing structure 54, there is a motor chamber 60 containing a stirrer motor 62, of which the drive shaft is in motion-communicating relationship with a stirrer drive shaft 64 through a belt 66 such that stirrer blades (not shown) attached to the stirrer drive shaft 64 for stirring, kneading and mixing the contents of the baking pan 58 can be rotated in a specified manner, such as alternately in the clockwise and counter-clockwise directions, by activating the stirrer motor 62 in a controlled manner.

The motor chamber 60 further contains therein a fan motor 68 for a centrifugal fan 70 which is inside the baking chamber 50 but is separated from the baking pan 58 by a partition wall 72. The partition wall 72 has upper windows 82 above the centrifugal fan 70 and a lower inlet 84 below the centrifugal fan 70 such that, when the fan motor 68 activates the centrifugal fan 70, the air which has been heated by the heater 52 is forced upward therethrough as shown by upwardly pointing arrows in FIG. 1 through the space between the partition wall 72 and the chamber-

WB 002507

Highly Confidential  
Attorneys' Eyes Only

US 6,196,113 B1

5

separating wall separating the baking chamber 50 from the motor chamber 60. The upwardly pushed hot air is forced to pass through the upper windows 82 towards the baking pan 58, flows downward around the baking pan 58 as shown by downwardly pointing arrow in FIG. 1 and is then sucked through the lower inlet 84 towards the centrifugal fan 70. Thus, the heated air inside the baking chamber 50 is caused to circulate therein as shown by the arrows in FIG. 1 around the baking pan 58, instead of becoming discharged out of the baking chamber 50 as was the situation with prior art breadmakers of this type. As a result, heat is more efficiently utilized through convection by a breadmaker embodying the present invention such that up to 2.0 lbs of wheat bread and up to 2.5 lbs of white bread can be baked with the amount of energy required to bake about 1.5 lbs of bread by a prior art bread maker of a comparable design. Because the forced air circulation according to the present invention has the favorable effect of making temperature distribution uniform through the baking pan 58, furthermore, tastier bread with improved texture can be obtained.

A coding system according to the present invention will be described next as applied to a breadmaker such as the one described above with reference to FIG. 1, but it is applicable equally well to many other kinds of program-controlled machines adapted to operate according to any one of a plurality of programs which may each be associated with a different kind of product such as bread by receiving materials such as ingredients required in the selected program.

FIG. 2 shows the breadmaker 15 schematically, as incorporating a coding system according to this invention, including a table 16, a memory device 17 which stores many programs and may be considered a part of a central processing unit 18 serving as control means for controlling the general operation of the breadmaker 15 as a whole by following any of these programs, and a control panel 25 provided with a display device 30 such as a liquid crystal display and many switches and buttons as input devices including a STOP/RESET button 31, a COLOR button 32 for choosing between normal and light bread coloring, and a START button 33 for starting a cycle of baking operations according to a selected program. An important feature of the invention is that the kinds of bread which can be baked or the processes which can be carried out by the breadmaker 15 are each assigned a code, which is preferably numeric, but may also be alphabetic or alphanumeric. As a practical example, numerical codes "10", "20" and "60" are assigned to represent not only "basic bread", "whole wheat bread" and a process of "kneading", respectively, but also the corresponding programs stored in the memory device 17 and intended to be called through the control means 18 to control the operation of the breadmaker 15 for baking basic bread, baking whole wheat bread and carrying out a predefined kneading process, respectively.

The table 16 is for showing to a user what code has been assigned to each kind of bread or process that can be selected, for example, by listing in one column all the codes which can be specified and in another column the kinds of bread and processes corresponding to the codes in the first column.

According to a preferred method of using the coding system described above, ingredients to be used for making each kind of bread listed in the table 16 are made available in a premixed form in a package as schematically shown at 19. Each package is clearly marked with the code representing the kind of bread to be baked or process to be carried out, that is, the program to be followed by the control means 18. This method is advantageous because the possibility of

6

making errors by the user can be reduced when ingredients are poured into the baking pan 58 of the breadmaker 15, and the user is spared of the trouble of preparing a required mixture of ingredients.

Next, the process of selecting a kind of bread to be baked or a process to be carried out and specifying it by a code to the control means 18 will be described with reference to the flow chart of FIG. 3 as well as the schematic of FIG. 2.

According to most practical embodiments of the invention, the program which is used most frequently, or believed to be used most frequently, is treated as the default program. Since the basic kind of bread with normal coloring is usually selected most frequently, the program for baking the basic bread is defined as the default program such that, when the STOP/RESET button 31 is pressed to reset the control means 18 (YES in Step S1), the code "10" corresponding to BASIC BREAD is automatically selected. Thus, after a reset, the display on the display device 30 will be as shown in FIG. 4 (Step S2).

The control panel 25 is provided with an UP button 34 and a DOWN button 35 for changing the specified-program. The codes which are assigned to different kinds of bread and processes are arranged in a sequence (in an ascending order, for example, if the codes are numeric) such that, whenever the UP button 34 or the DOWN button 35 is pressed (YES in Step S3 or S5), the control means 18 selects the program corresponding to the next code in the sequence in the forward or backward direction, respectively, and causes the new code corresponding to the newly selected program to be displayed on the display device 30, as well as the name of the corresponding kind of bread or process selected (Step S4 or S6). Similarly, if the COLOR button is pressed (YES in Step S7), the selected color changes from normal to light or from light to normal, and the display on the display device 30 also changes from NORMAL to LIGHT, or from LIGHT to NORMAL (Step S8). When one of the codes and the bread color (normal or light) have been selected and the START button 33 is pressed (YES in Step S9), the control means 18 begins to operate the breadmaker 15 according to the selected one of the stored programs (Step S10).

As shown in FIG. 2, the control panel 25 is further provided with a timer button (TIMER) for entering the timer setting mode of operation to set a timer (not shown), a clock button (CLOCK) for entering the clock setting mode of operation to set a clock (not shown), an hour button (HR) and a minute button (MIN) for respectively setting the hour and the minute in the timer and clock setting modes, and a set button (SET) for setting the timer or the clock, as well as light emitting diodes marked TIMER, OPERATION and COMPLETE to show respectively that the control is in the timer setting mode, that the baking operation is going on and that the baking operation has been completed. These and similar kinds of buttons and diodes have been in use with prior art breadmakers, and their functions are well known by the users.

Thus, they are illustrated in FIG. 2 but will not be described in any detail herein.

The present invention was described above with reference to only a few examples. These examples are intended to be merely illustrative, however, and not limitative. Many modifications and variations are possible on the disclosed examples. For example, the coding system of the present invention need not relate to a breadmaker, or more generally to a food machine, but also to any program-controlled machine allowing a user to select one of a plurality of programs and operating on such a selected program by using

WB 002508

Highly Confidential  
Attorneys' Eyes Only

US 6,196,113 B1

7

a special material associated with the program. A particular coding method was illustrated above, but the codes need not necessarily be arranged in a sequence such that they appear in the display device one by one in that sequence, either in the forward or backward direction, to allow the user to decide whether or not to select the one of the choices being displayed. The control panel may be provided with numeric keys, or alphanumeric keys, to allow the user to form a numeric or alphanumeric code to directly call a desired program.

#### Versatile Appliance Having Updatable Programs

The coding system described above allows individual programs from a repertoire thereof previously preset into a machine to be efficiently identified and accessed. The other advantage is when a premixed package of food ingredients is labeled with an appropriate code, the user can conveniently call up the correct process in the machine by simply entering the code.

However, even with a large repertoire of programs preset into the machine at the time of manufacture, there may be occasions when a user may want to use a new recipe or a new premixed package of food ingredients that requires a new program not found in the existing repertoire of the machine.

One feature of the invention allows a machine or appliance to run additional new programs outside its existing repertoire. This is accomplished by providing facility for a user to transfer new programs to the appliance.

Another feature of the invention incorporates multiple functions into a versatile appliance operating under the control of programs which are updatable. In this way, one versatile machine or appliance can replace several dedicated machines.

FIG. 5A illustrates one embodiment of the versatile food appliance 115 with removable memory. This embodiment has a housing 154 with a front-opening door 156. The housing encloses a food processing chamber which is accessible through the opened door. On the housing is a control panel 125 with display through which a user can interact with the food appliance 115. In this example, the versatile food appliance is able to function as a toaster oven, a microwave oven and a breadmaker.

FIG. 5B is a sectional view of the embodiment shown in FIG. 5A. A chamber 150 is formed inside the housing structure 154. Inside the chamber is a pair of top and bottom electric heating elements 153, 155. Shelves or racks 157 are removably mounted in the chamber for supporting food to be processed. The shelves are resting on supports 159 on the chamber walls. By selectively powering either top or bottom or both heating elements 153, 155, the appliance can be made to function much like a toaster oven.

Adjacent to but separated by a chamber wall 180 from the chamber 150 inside the housing structure 154 is a motor chamber 160. The motor chamber contains a centrifugal fan 170. The centrifugal fan 170 draws air from the chamber through an inlet 182 near a bottom opening of the chamber wall 180 and blows it back into the chamber through an outlet 184 near a top opening of the chamber wall 180. When the centrifugal fan 170 is operating in combination with the heating elements 153, 159 the food appliance is functioning as a convection oven.

Between the top wall 151 of the chamber and the housing structure is optionally a magnetron 161 for providing a microwave source which is emanating into the chamber via a port from the top wall 151. The motor chamber 160 further contains a drive motor 162, of which the motor shaft is in motion-communicating relationship, by means of a drive

8

belt 166, with a drive shaft 164 extending into the chamber through the bottom chamber wall. A turntable is removably mounted on the drive shaft, such as food placed on the turntable can be rotated in a specified manner, by activating the drive motor 162 in a controlled manner. When the magnetron operates in combination with the turntable, the food appliance is functioning as a microwave oven.

Alternatively, a bread pan 158 for receiving bread ingredients therein can be removably set inside the chamber 150, with a stirrer blade inside the bread pan engaged with the drive shaft 164. Thus, bread making ingredients received in the bread pan can be stirred, kneaded and mixed through the action of the stirrer blade driven by the drive shaft. In this way, the food appliance is functioning as a breadmaker.

It can be seen that the versatile food appliance is capable of operating like different dedicated food machines.

FIG. 6 is a schematic block diagram of the versatile food appliance, according to a preferred embodiment of the invention. Essentially, the versatile food appliance 115 comprises a plurality of hardware components controlled by an appliance controller 200.

The plurality of hardware components, depending on configurations, may include one or more motor drives 210. For example, in a microwave oven mode of operation, one of the motors is used to drive a turntable so that food supported thereon can get a more even microwave exposure. In a rotisserie mode of operation, one of the motor drives is used to rotate a rack so that food mounted thereon may be heated more evenly on all sides when exposed to localized heating elements. In a breadmaking mode of operation, one of the motor drives is used to turn a mixing and kneading blade inside a baking pan, as described in an earlier section.

Similarly, the plurality of hardware components, depending on configurations, may include one or more heater elements 212, such as the heater elements 153, 155 shown in FIG. 5B. These heater elements may be turned on individually or in combination in order to perform broiling, toasting, baking, self-cleaning etc.

When the food appliance includes a pan for receiving food ingredients, the heater elements enable it to operating in a slow cooking mode-similar to that of a crockpot. When the pan is partially filled with water and food is support above the water, the food appliance is able to operate as a steamer.

Similarly, the plurality of hardware components, depending on configurations, may include a magnetron 214, such as the magnetron 161 shown in FIG. 5B. In a microwave oven mode of operation, the magnetron is used to produce microwave heating in the chamber.

Similarly, the plurality of hardware components, depending on configurations, may include one or more fans 216, such as the centrifugal fan 170 shown in FIG. 5B. For example, in a convection oven mode or in a breadmaking mode of operation, the fan is used to circulate hot air in the chamber.

Similarly, the plurality of hardware components, depending on configurations, may include one or more solenoids 218. The solenoids are generally used to open or close valves or vents, and to actuate various mechanical contraptions.

Similarly, the plurality of hardware components, depending on configurations, may include other electromechanical transducer 220. U.S. Patent application, "Breadmaker With Improved Temperature and Humidity Control", filed on the same day as the present application, by Simon K. C. Yung, is incorporated herein by reference. The incorporated disclosure describes improved temperature and humidity control in which an ultrasonic humidifier is a component inside the breadmaking chamber.

WB 002509

Highly Confidential  
Attorneys' Eyes Only

US 6,196,113 B1

9

The plurality of hardware components is controlled by a hardware control unit 240. A power supply 230 provides electric power to the plurality of hardware components under the control of the hardware control unit 240. Although, FIG. 6 shows a number of specific hardware components, it will be understood that various hardware components are optionally implemented. Other hardware components not shown are also contemplated. On the other hand, not all shown hardware components need be implemented at the same time.

The intelligence of the appliance controller is provided by a microprocessor 250 executing codes and programs that are stored in a non-volatile memory (NVM) 252 and a random-access memory (RAM) 254. The microprocessor, the NVM and the RAM are in communication with each other via a bus (not shown). In one embodiment, the NVM is in the form of a read-only memory (ROM). It stores firmware and a preset repertoire of programs that were initially shipped with the appliance. In another embodiment, the NVM is in the form of EEPROM or flash EEPROM memory which essentially provides rewritable mass storage. The RAM is typically used as a scratch patch memory when the microprocessor executes a program.

Another special feature of the present invention is the provision for updating the repertoire of programs in the appliance. This is accomplished by the ability to interchange data with the appliance controller.

In one embodiment, the new programs are transferred via a memory port which is able to receive a removable memory card that a user can plug into the appliance.

The appliance optionally includes a non-volatile memory interface 260 that interfaces with the microprocessor 250 on one hand and with a removable memory card 264 via a card connector 262 on the other hand. The memory card 264 is a non-volatile memory such as ROM, EPROM, EEPROM or preferably one of the standardized flash memory cards currently being introduced in other consumer products such as in digital still cameras, digital voice recorders and cellular, phones and handheld devices. Other possible non-volatile memories include magnetic and optical disks.

Since the removably memory cards are portable from host to host and are becoming standardized, they can be used to exchange data easily between a variety of hosts. For example, new or updated programs for the appliance may be created by the manufacturer or other developers and distributed on a ROM or flash memory card to the consumer. A new bread recipe embodied in a premixed package of ingredients may come with a new breadmaking program stored in a flash memory card or a floppy. In the latter case, the program on the floppy may be transferred to a flash card by means of a personal computer (PC). Alternatively, the programs could be downloaded from a website by the consumer and saved onto a flash card plugged into a PC. Then the flash card is moved to the general-purpose appliance to update or augment the existing programs therein.

In another embodiment, the updating of the repertoire of programs in the appliance is accomplished via a standard data port 295, such as a parallel port or a serial port or an infrared port provided on the food appliance.

The microprocessor 250 is in communication with the hardware control unit 240 via a digital interface 242 coupled to an internal bus 270 of the Appliance controller. The digital interface 242 provides conversions between analog and digital signals and enables the microprocessor to control the hardware control unit 240.

One or more sensors 280 provide detection of various conditions associated with the operation of the appliance.

10

The signals from such sensors are received into the hardware control unit 240. In one embodiment, the signals are fed into a local servo circuit which is used directly to control some of the plurality of hardware components. In another embodiment, the signals are made available via the digital interface on the internal bus 270. The microprocessor 250 is then able to monitor the sensor signals and take appropriate actions accordingly.

An input/output (I/O) interface 290 is also in communication with the microprocessor 250 via the internal bus 270.

The I/O interface allows one or more peripheral devices to interact with the appliance controller 200 and more particularly with the microprocessor 250. In the preferred embodiment, one such peripheral device is a display and input unit 292 such as the control panel 190 shown in FIG. 5B.

In another embodiment, the peripheral devices are externally connectable to the appliance and include a television 294 which can be used to display multimedia information. For example, a premixed package of ingredients may include a memory card that, given sufficient memory, stores a program for running the appliance plus a multimedia file which is a video clip giving cooking instructions for the particular package.

In another embodiment the peripheral devices externally connectable to the appliance include a personal computer 296 which is preferably connected via the standard interface 295 which is either a parallel port or a serial port to the I/O interface 290. This allows for multimedia files to be played back as well as for even more flexible exchange of data and control.

FIG. 7 illustrates another embodiment of the versatile food appliance 115 with removable memory. This embodiment is essentially similar to that shown in FIG. 5A except it has a taller form factor. It has a housing 154 with a top-opening door 156. The housing encloses a food processing chamber which is accessible through the opened door. On the housing is a control panel 125 with display through which a user can interact with the food appliance 115. The taller form factor lends itself to accept a baking pan with its long axis vertical and engaged to a vertical drive shift at the bottom of the chamber, much like that of a conventional breadmaker. When the appliance operates in rotisserie mode, the baking pan is replaced by a rotisserie rack engaged on the vertical drive shift. In this case, the heating element is preferably a line element running vertically along a wall of the chamber.

The improved food appliance may be a versatile, multi purpose food machine depending on the program it is running. Its basic functions can include radiant heating, microwave heating, mechanical mixing and turning, and combination thereof. For example, the improved food appliance is programmable to act as any number of standalone machines such as a breadmaker, various type of oven, a rice-cooker, among others. Although the food appliance has been described with a multitude of optional hardware components, not all components need be implemented at the same time. Similarly, even a number of peripheral devices are shown, not all peripheral connections need be implemented at the same time.

Coding System for Process Parameters

Another feature of the invention is to provide a food appliance that allows the process it is running to be modifiable by a group of parameters. Many of the processes run by a food appliance are similar and only differ in some portions of the process, the variation being definable by a group of process parameters. For example, two processes may differ by the duration or temperature in one cycle thereof.

WB 002510

Highly Confidential  
Attorneys' Eyes Only

US 6,196,113 B1

11

This feature of the invention is accomplished by setting up programs in parametric form where the parametric program executes its process responsive to a process parameter configuration, i.e., values assigned to a predetermined group of process parameters. In this way, the repertoire of the food appliance is greatly increased without having to store many similar programs.

In one embodiment, the process parameter configuration can be specified by a user by entering the values for each of the parameters directly via the food appliance input device. For example, the user can modify the duration or temperature of one or more cycles of the program. The input values are stored in a set of registers in the appliance controller. When a program is being executed by the food appliance, it references the registers to configure corresponding program variables.

In a preferred embodiment, the coding scheme described earlier for program identification and indexing can also be used to do the same for identifying and indexing any number of process parameter configurations. A lookup table in memory stores a plurality of process parameter configurations and their associated codes and indices.

FIG. 8 illustrates schematically an example lookup table 316 for process parameter configurations. A group of process parameters may be given by (cycle number, temperature, duration, . . . ) A process parameter configuration is defined when all the parameters in the group are assigned definite values. A parameter code is assigned to each predetermined process parameter configurations. For example, the parameter code 520 is assigned to the process parameter configuration (5, 120, 20, . . . ), the parameter code 540 to (5, 140, 20, . . . ), etc. Thus, the parameter configuration lookup table 316 contains coded indexed entries of process parameter configurations. Each entry may optionally contain additional information associated with the configuration, such as a description of the configuration. Similar to the table 16 shown in FIG. 2, the additional information may be shown on the display of the food appliance for the user's convenience.

In this way, a desired process to run on the food appliance is selected when its associated parametric program is called up by its program code, and the associated process parameter configuration for the program is called up by its parameter code.

FIG. 9 illustrates a table 16' using a single code to represent one combination of a parametric program and a process parameter configuration, according to a preferred embodiment. The table 16' is similar in structure to the table 16 shown in FIG. 2. The single code may be formed by a concatenation of the program code and a parameter code.

In a system including a food appliance and a plurality of packaged ingredients, an appropriate code or set of codes may be marked on each package of ingredients, similar to what has been described earlier so that the same code may be entered into the food appliance to call up the appropriate program and process parameter configuration to process the ingredients.

While the embodiments of the various aspects of the present invention that have been described are the preferred implementations, those skilled in the art will understand that variation thereof may also be possible. The device and method described therein are applicable to a versatile food appliance that is capable of using updatable programs to operate the appliance in a variety of modes normally available individually through conventional dedicated food appliances. Therefore, the invention is entitled to protection within the full scope of the appended claims.

12

It is claimed:

1. A food appliance, comprising:

a chamber for processing food therein;  
one or more food processing functional units inside said chamber;  
a controller for controlling operations of said one or more food processing functional units;  
a first memory for storing a repertoire of preprogrammed processes;  
an input for receiving input data into said food appliance, including data designating a preprogrammed process among said repertoire of preprogrammed processes;  
control means for operating said controller according to the designated preprogrammed process; and  
a port for updating said repertoire of preprogrammed processes with one or more additional preprogrammed processes.

2. A food appliance as in 1, wherein said one or more food processing functional units include a radiant heater.

3. A food appliance as in 1, wherein said one or more food processing functional units include a microwave heater.

4. A food appliance as in 1, wherein said one or more food processing functional units include a mechanical actuator.

5. A food appliance as in 1, wherein said port is a memory port connectable to a removable memory.

6. A food appliance as in 1, wherein said port is a data port connectable to a data source.

7. A food appliance as in 1, wherein said one or more additional preprogrammed processes are obtainable from said removable memory.

8. A food appliance as in 1, wherein said one or more additional preprogrammed processes are obtainable from a website.

9. A food appliance as in 5, wherein said removable memory includes read only memory.

10. A food appliance as in 5, wherein said removable memory includes EPROM.

11. A food appliance as in 5, wherein said removable memory includes EEPROM.

12. A food appliance as in 5, wherein said removable memory includes flash EEPROM.

13. A food appliance as in 5, wherein said removable memory includes a magnetic storage medium.

14. A food appliance as in 5, wherein said removable memory includes an optical storage medium.

15. A food appliance as in anyone of 1-14, further comprising:

a pan inside said chamber for receiving ingredients therein.

16. A food appliance as in anyone of 1-14, further comprising:

a rack inside said chamber for supporting the food being processed.

17. A food appliance as in anyone of 1-14, further comprising:

a magnetron for providing microwave heating in said chamber.

18. A food appliance as in anyone of 1-14, including a preprogrammed process that operates said food appliance in a baking mode.

19. A food appliance as in anyone of 1-14, including a preprogrammed process that operates said food appliance in a broiling mode.

WB 002511

Highly Confidential  
Attorneys' Eyes Only

US 6,196,113 B1

13

20. A food appliance as in anyone of 1-14, including a preprogrammed process that operates said food appliance in a toasting mode.

21. A food appliance as in anyone of 1-14, including a preprogrammed process that operates said food appliance in a microwave heating mode.

22. A food appliance as in anyone of 1-14, including a preprogrammed process operates said food appliance as a rotisserie.

23. A food appliance as in anyone of 1-14, including a preprogrammed process that operates said food appliance as a breadmaker.

24. A food appliance as in anyone of 1-14, including a preprogrammed process that operates said food appliance as a rice cooker.

25. A food appliance as in anyone of 1-14, including a preprogrammed process that operates said food appliance as a slow cooker.

14

26. A food appliance as in anyone of 1-14, including a preprogrammed process that operates said food appliance as a steamer.

27. A food appliance as in anyone of 1-14, including a preprogrammed process that operates said food appliance in a high-heat, self-cleaning mode.

28. A food appliance as in anyone of 1-14, including an input/output interface for one or more peripheral devices to operate with the food appliance.

29. A food appliance as in 28, wherein said one or more peripheral devices include a multimedia system.

30. A food appliance as in 29, wherein said multimedia system include a personal computer.

31. A food appliance as in 29, wherein said multimedia system include a television.

\* \* \* \* \*

WB 002512

Highly Confidential  
Attorneys' Eyes Only

# EXHIBIT C

## PART 7

**WB 002513**

**Highly Confidential  
Attorneys' Eyes Only**

**United States Patent** [19]

[11] 3,904,852

Rivelli et al.

[45] Sept. 9, 1975

[54] **DEEP FAT FRYING COOKING CONTROL MODULE**

[75] Inventors: Louis E. Rivelli, Shelton; Miles J. Barnes, Woodbridge, both of Conn.

[73] Assignee: Food Automation-Service Techniques, Inc., Stratford, Conn.

[22] Filed: Feb. 3, 1975

[21] Appl. No.: 546,501

[52] U.S. Cl. .... 219/442; 99/333; 99/403; 219/435; 219/494

[51] Int. Cl.<sup>2</sup> ..... F27D 11/02

[58] Field of Search ..... 219/412, 413, 425, 435, 219/436, 437, 438, 441, 442, 494; 99/331, 332, 333, 403

[56] **References Cited****UNITED STATES PATENTS**

2,805,314 9/1957 Michalik ..... 219/437

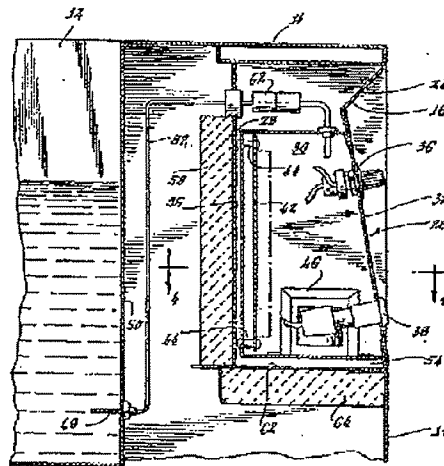
3,720,155	3/1973	Fritzsche	99/337
3,787,594	1/1974	Palmasen	99/403 X
3,824,373	7/1974	Napier	219/494
3,828,163	8/1974	Amagami et al.	219/413

Primary Examiner—Volodymyr Y. Mayewsky  
 Attorney, Agent, or Firm—Haynes N. Johnson

[57] **ABSTRACT**

A deep fat frying cooking system includes a solid state deep fat frying cooking timing control computer directly within the cooker console. The heat sensitive computer circuitry is positioned within a dead air compartment located behind the front panel of the cooker console aiding convenience of operation. The timing control computer is provided as a modular unit which may be easily mounted in the panel and conveniently removed for necessary replacement and/or repair.

4 Claims, 4 Drawing Figures



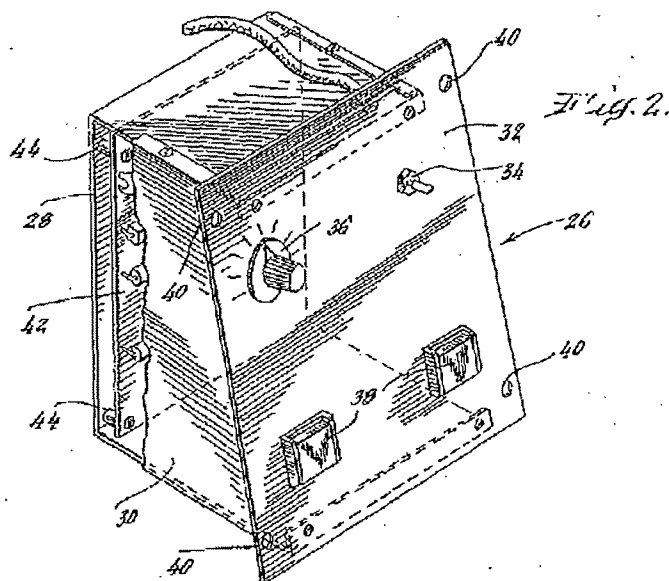
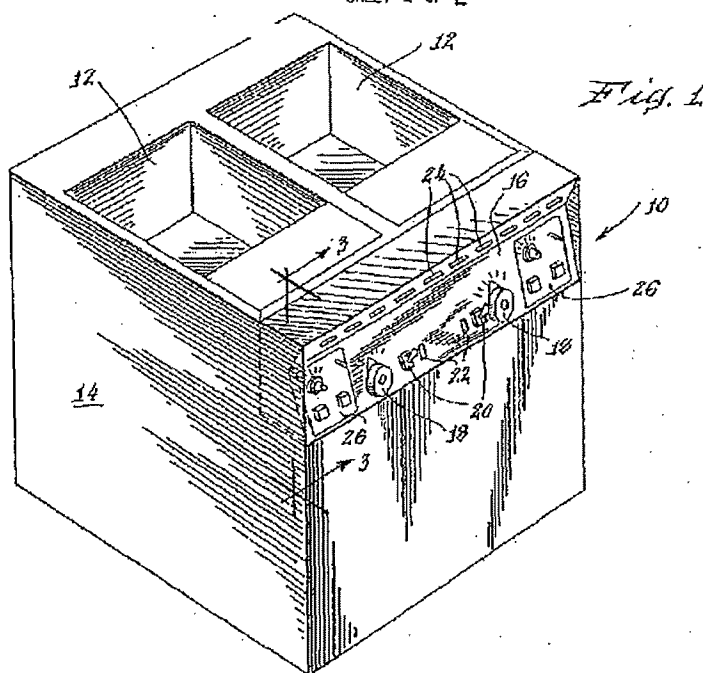
WB 002514

Highly Confidential  
 Attorneys' Eyes Only

PATENTED SEP 9 1975

3,904,852

SHEET 1 OF 2



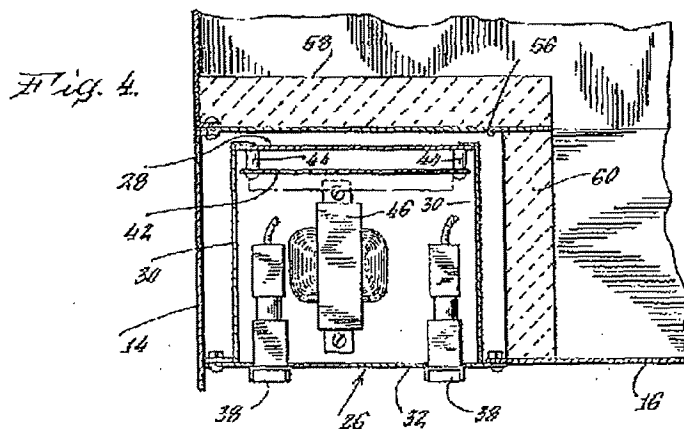
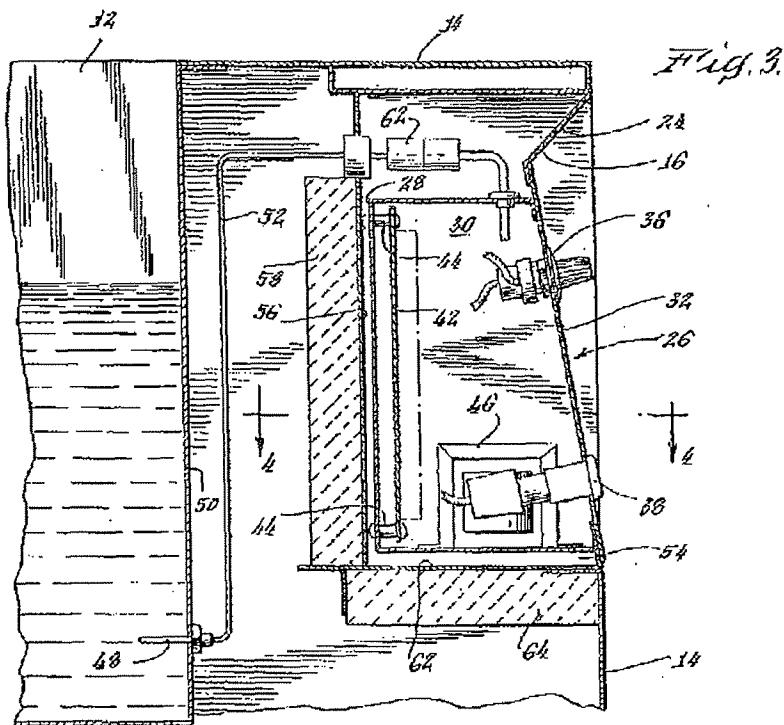
WB 002515

Highly Confidential  
Attorneys' Eyes Only

PATENTED SEP 9 1975

3,904,852

SHEET 2 OF 2



WB 002516

Highly Confidential  
Attorneys' Eyes Only

3,904,852

# DEEP FAT FRYING COOKING CONTROL MODULE

## BACKGROUND OF THE INVENTION

This invention relates to deep fat frying cooking systems and more particularly to such systems utilizing programmed control of the cooking process to achieve reproducible predetermined cooked product characteristics.

Deep fat frying cooking is widely used in restaurants and similar commercial food establishments and has found increasing popularity in fast food operations where it is utilized for the preparation of food products such as french fries, onion rings, fish sticks and the like. Perhaps the most significant criteria to be met in preparing such foods, aside from taste, is the degree of "doneness" which in the case of deep fat fried food can be recognized as crispness of product. The degree of "doneness" or crispness that is desired by the consuming public frequently varies from one geographical location to another. However, within one location, particularly within a single food outlet, it is desirable to maintain a consistent average standard of degree of "doneness" or crispness and thus quality control becomes essential.

Deep fat frying cooking is a function of heat transfer in that a given amount of heat transfer will produce a known change in the food product. Thus, it is possible to measure "doneness" or crispness by measuring the amount of heat transferred to the product. Ideally, given the same amount of food product in the same condition and the same amount of heat transfer during each cooking cycle, cooking could be regulated according to a fixed time. In actuality, however, these conditions do not exist since the product varies from unit to unit to a degree and, therefore, the proper cooking time varies also. Generally, the individual responsible for cooking determines the degree of "doneness" or crispness of a product, such as french fries, by tasting, feeling and observing the appearance of the product. This is somewhat subjective and disadvantageous, especially within a fast food outlet where the personnel vary from employment shift to shift or if there is a turnover of personnel.

To overcome the aforementioned disadvantages, a deep fat frying cooking control to achieve product consistency has been provided. Such a device, available under the trademark (FASTRON), is a solid state cooking computer for fried food products such as french fries and the like manufactured by Food Automation Service Techniques Incorporated. Such a cooking computer provides crisp control by computing the proper cooking cycle for french fries regardless of such variables as cooking oil temperature, potato temperature, potato solids content, potato size or cut, inconsistent blanching, batch size and employee experience. The solid state cooking computer is factory programmed to cook the potato to the desired average degree of "doneness" or crispness by timing the cooking cycle.

The solid state cooking computer has generally been located in a control unit mounted near the deep fat fryer cooker. A probe, set in the base of the fryer kettle or well connects the control components contained in a sealed cabinet to the fryer kettle. The solid state timing controls themselves are maintained separated from

the deep fat fryer cooking console because of the high heat generated by the cooking kettles and transferred to the surrounding air and housing enclosing them. If the solid state components are subjected to temperatures much above 158°F a danger exists that the solid state controls would be adversely affected. Thus, the timing controls have always been provided in a separate unit apart from the cooker console housing to avoid the deleterious effects of the high temperatures involved although the simple controls for the cooker, such as on-off and temperature variation controls, have been mounted within the cooker console itself since these are not temperature sensitive. It would be beneficial to convenience of use and packaging of equipment and related controls to be able to provide such solid state timing controls for regulating the degree of product "doneness" or crispness directly within the cooker console itself.

## SUMMARY OF THE INVENTION

The present invention overcomes the drawbacks associated with the need for providing the solid state cooking computer controls in a unit separate from the deep fat fryer cooker console itself, facilitates operation of the computer activation controls by the chef and provides economy of manufacture in making available a more efficient cooker console which directly incorporates the timing controls. The foregoing is achieved, according to the invention, by providing a dead air space compartment, within the cooker console housing, in which the temperature is maintained below that temperature which would be deleterious to the solid state timing components.

Thus, while the cooker console housing interior heats up, and convection flow of air therein and to the outside is permitted for cooling, the dead air space compartment contains no convection flow of air and is sealed from the housing interior avoiding the temperatures therein. The compartment is advantageously provided on the front panel of the cooker console which contains the other frying kettle controls which are not temperature sensitive. The computer controls can be placed directly within the panel as a modular unit with the probe passing directly to any wall of the cooking kettle for measuring the necessary oil characteristics. Since the cooking computer is located within the front panel adjacent to the other controls it is convenient to operate, and, being a module located in the front of the console, may be readily removed for replacement and/or repair if necessary.

Thus, it is a feature of this invention to provide cooking timing controls directly within the console housing the deep fat fryer cooker. It is a further feature of this invention to provide a means within the console housing deep fat fryer cookers wherein temperature sensitive electric and electronic elements may be mounted free from the deleterious effect of high temperatures normally present within the console housing. Another feature of this invention is the provision of a modular deep fat fryer cooking control unit for mounting in the cooker console.

## BRIEF DESCRIPTION OF THE DRAWINGS

The aforementioned advantages and features of this invention will become more apparent from the following description of the invention taken in conjunction with the accompanying drawings in which:

WB 002517

Highly Confidential  
Attorneys' Eyes Only

3,904,852

3

FIG. 1 is a top front perspective view of a deep fat frying cooker console showing the cooking timing control module positioned in the front panel thereof in accordance with an embodiment of the invention;

FIG. 2 is a top front perspective view of a cooking timing control module according to an embodiment of this invention;

FIG. 3 is a side view, partly in section, of the timing control module, showing its position within the cooker console, taken along line 3—3 of FIG. 1; and

FIG. 4 is a top view, in section, of the timing control module, taken along the line 4—4 of FIG. 3.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 illustrates a typical deep fat fryer cooking system having a cooker console 10 such as may be obtained commercially under the tradename FRYMMASTER. The cooker console 10 includes deep fat frying kettles or wells 12 surrounded by an enclosure housing 14. Associated with the cooker console may be racks for supporting the frying baskets out of the cooking oil and similar known appurtenances which are not relevant to the present invention and need not be shown. The cooker console 10 has a panel, indicated generally at 16, mounted within the front of the housing 14 and spaced a distance from the front walls of the frying kettles 12.

The panel 16 carries kettle temperature variation controls 18 for regulating the temperature of the cooking oil within the kettle, on-off switches 20 and indicator lights 22. The panel 16 may also carry protective circuitry for the deep fat fryer cooker which functions as a safety switch to shut down the unit if the oil or shortening temperature reaches a dangerously high temperature, around 400°F. The panel 16 also contains slotted openings 24 along its upper edge which serve to release warm air within the housing which has been heated due to the high operating temperatures of the kettles 12.

Mounted within the panel 16 are solid state cooking timing controls or computer modules 26, shown in greater detail in FIG. 2. Referring to FIG. 2, it is seen that the computer module 26 comprises a chassis 28 to which are attached side covers 30 and a front panel face plate 32. The front panel 32 carries a test switch 34 which may be left in "operate" position or positioned to test the control probe or the solid state controls. An adjustable dial control 36 enables the user to select the degree of crispness control for reproducible crispness of the food fried in the kettle 12. The cook cycle starting and stopping switches are shown at 38. The front panel face plate 32 contains openings 40 utilized to fasten the computer module 26 in the panel 16 of the cooker console 10.

The interior of the computer module 26 includes those components which form the circuit for cooking timing control. Referring to FIG. 3, it can be seen that printed circuit board 42 is spaced from the chassis 28 by means of spacing bolts 44. This aids in reducing conducted heat flow to the board from the module and provides a space for cooling air flow if desired. The specific details of the electrical circuitry components need not be described for the purposes of this invention, it being sufficient to point out that they are all contained within the computer module 26 for convenient insertion into the panel 16. A separable connection, such as

4

the coupling 62, permits quick connection and disconnection of the module circuitry to the control probe. Thus, the computer module includes the electrical and electronic components on the printed circuit board 42, the switches such as 36 and 38 and various other components, such as transformer 46, mounted therein. A probe 48, positioned in any side 50 of the cooking kettle 12, senses the characteristics of the oil in the kettle and transmits a signal representative of the same to the computer module 26 via the line represented at 52.

FIGS. 3 and 4 show the manner in which the computer module 26 is mounted within a compartment 54 situated between the panel 16 and the front side 50 of the frying kettle 12. The compartment 54 is mounted on the side nearest the front side of the cooking kettle and separated therefrom by means of a rear wall 56 having insulation means 58 thereon. The two side walls of the compartment 54 are defined by the outer wall of the housing 14 and an opposite compartment wall defined by insulation means 60 which is firmly affixed to the panel 16 and the rear wall 56. A compartment floor or bottom wall 62 also carries insulation means 64 which cooperates with the other insulation means described to provide thermal shielding for the compartment from the hot air within the housing 14.

The compartment 54 is thus closed off from the interior chamber of the cooker console 10 defined by the housing 14 and communicates with the exterior of the console only through the slotted openings 24. Thus, the compartment 54 defines a dead air space through which no air is circulating. In contrast, however, air circulates within the interior of the housing 14 due to convection currents arising from the heat of the frying kettles 12. This air circulates and exits from the cooling slots 24 in the panel 16. The temperature of this circulating air may be as high as 250°F in the region of the panel 16. Such a temperature would be harmful to solid state components, such as those in the timing control circuit, which are highly temperature sensitive.

However, according to this invention, insulation is provided which retards heat transfer from the air flow in the region immediately adjacent to the compartment 54, containing the computer module 26. Consequently, the air in the compartment is kept cooler, below about 158°F. In addition, the computer module 26 is mounted within the dead air space in the compartment 54 and is spaced from the sides of the compartment, at least approximately one quarter of an inch, to avoid any heat conduction flow due to contact between the module 26 and the walls of the housing 14. The only contact is between the front panel face plate 32 of the module 26 and the panel 16 of the cooker console 10. Although this front panel 16 may be warm, it is much cooler than the convection air within the housing 14, being designed to be at least under 160°F, since such is the temperature considered the maximum that a human can touch momentarily without being burned. Thus, dead air surrounds the five sides of the computer module unit 26 while the front panel is exposed to the ambient room air.

Hitherto, it was not believed that solid state components of such a computer could be located directly within the cooker console 10. The components used in such circuitry generally have an operational rating of approximately 158°F. The problems of temperature sensitivity overcome by this invention also make possible the insertion of the probe 48, for the control of the

WB 002518

Highly Confidential  
Attorneys' Eyes Only

3,904,852

5

cooking time, directly through the front wall 50 of the kettle 12. Thus, the computer module 26 itself is most conveniently mounted on the panel 16 within the housing 14 of the cooker console 10 in close proximity thereto.

The computer solid state components themselves generate little heat. Nevertheless, if desired, the side covers 30 can be provided with openings so that the interior of the module 26 can communicate with the compartment 54. The location of the computer module 26 on the front panel 16 facilitates its convenience for operation. The chef need merely push the cook cycle start switch 38 each time one or more baskets of food to be fried are set in the frying kettle 12. When done according to the previously selected degree of doneness selected by control 36, a buzzer, which is part of the computer circuitry, sounds and/or another signal, such as a light, is provided. The food is then removed and the cycle switch once again pushed to quiet the buzzer and/or extinguish the light.

By providing the cooking timing control computer in a module such as 26, it can be readily installed in the panel 16 and can be easily removed for repair or replacement. This also reduces the risk of having to run wires externally to connect the probe to a computer unit located at a position distant from the cooker console 10 and the frying kettle 12 and thus increases safety.

We claim:

1. In a deep fat fryer cooking system including a deep fat frying kettle and heating means for heating the same, a housing substantially enclosing the bottom and four sides of the kettle and having a panel in proximity to a side of the kettle, the panel carrying kettle on-off and temperature controls and the like, the improvement of a heat sensitive solid state electrical circuitry deep fat frying cooking timing control computer module located in the panel, comprising:

a chamber defined essentially by the frying kettle, the panel and the housing,

6

the chamber being adapted to provide convection air flow for cooling of the frying kettle, a thermally insulated compartment within the chamber,

the compartment being sealed from communication with the chamber so as to define a dead air space therein,

the temperature of the air within the chamber being above that temperature having a deleterious effect on the solid state electrical components of the computer,

the temperature of the air within the compartment being below that temperature having a deleterious effect on the solid state electrical components of the computer, and

the computer module being positioned within the compartment.

2. The improvement as claimed in claim 1 wherein: one wall of the compartment is formed by the panel, the other walls defining the compartment are positioned within the chamber, and

the computer module is mounted in the panel and the compartment maintained spaced from the walls of the compartment positioned within the chamber so as to minimize the likelihood of conduction heat flow to the module from the chamber.

3. The improvement as claimed in claim 2 wherein: a sensing probe means for sensing the characteristics of the frying oil is connected to the computer module, and

the probe means is inserted in the wall of the frying kettle most proximate to the compartment containing the computer module.

4. The improvement as claimed in claim 2 wherein: the heat sensitive solid state components of the computer are located on a board-like support means, and

the support means is positioned within the computer module spaced from the walls of the module.

\* \* \* \* \*

WB 002519

Highly Confidential  
Attorneys' Eyes Only

**WB 002520**

**Highly Confidential  
Attorneys' Eyes Only**



US005477029A

**United States Patent** [19][11] Patent Number: **5,477,029**

Skutt et al.

[45] Date of Patent: **Dec. 19, 1995**[54] **KILN WITH HINGED CONTROL PANEL****OTHER PUBLICATIONS**

[75] Inventors: James E. Skutt, Portland, Oreg.;  
Michael J. Hampel, Vancouver, Wash.

Cress Firemate brochure, Cress Mfg. Company, U.S.A.  
Aim Kilns catalog #209, Aim Kiln Mfg. Co., U.S.A.  
Skutt Kilns catalog, Skutt Ceramic Products, Inc., Aug. 1992, U.S.A.  
Duncan Kiln Catalog, Jun., 1992, U.S.A.  
Paragon Kilns catalog, Paragon Industries, Inc., U.S.A.  
Evenheat Kiln Inc. catalog, 1992, U.S.A.  
Programatic Kilns catalog, L & L Mfg. Co., Inc., Feb. 1993, U.S.A.  
High Fire Kilns Plus! catalog, Knight Kiln Co., Feb. 1993, U.S.A.  
Cress M-Series catalog, Cress Mfg. Company, U.S.A.

[73] Assignee: Skutt Ceramic Products, Inc.,  
Portland, Oreg.

[21] Appl. No.: 188,959

[22] Filed: Jan. 28, 1994

[51] Int. Cl.<sup>6</sup> F27B 5/14[52] U.S. CL. 219/390; 219/521; 219/492;  
361/688; 432/250

[58] Field of Search 219/482, 483,  
219/490, 492, 493, 494, 497, 521, 390,  
400; 174/10, 15.7, 16.1, 17 CT; 50; 361/714,  
784, 383, 389; 432/250; 165/1, 47

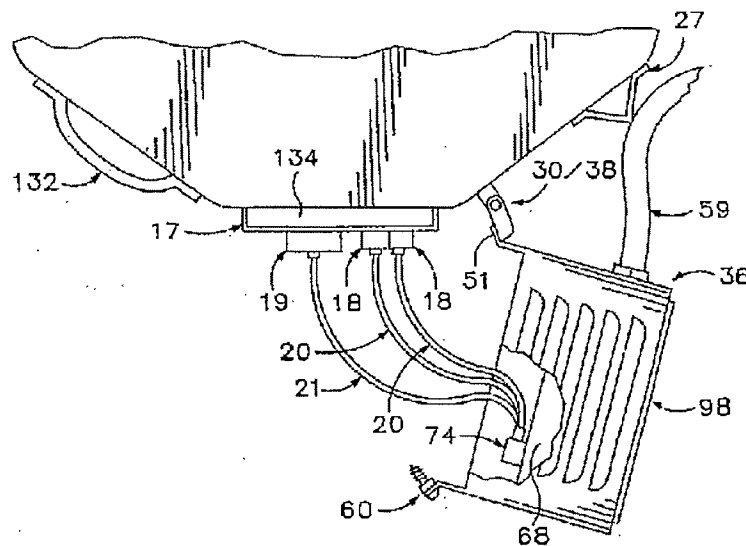
[56] **References Cited****U.S. PATENT DOCUMENTS**

3,681,663	8/1972	Albers	317/100
3,958,933	5/1976	Duncan	432/250
4,215,265	7/1980	White	219/390
4,500,943	2/1985	Oreane	361/383
4,553,386	8/1985	Frey et al.	361/389
4,705,930	11/1987	Sathre, Jr. et al.	219/492
4,742,864	5/1988	Duell et al.	165/1
4,754,179	6/1988	Capuano et al.	310/71
4,837,423	6/1989	Peterson et al.	219/390
4,897,526	1/1990	Anthony	219/492
5,285,355	2/1994	Chabert et al.	361/784

[57] **ABSTRACT**

A kiln assembly is disclosed, including a heated kiln with an attached control box containing controls connected to the kiln heater. The control box is mounted on the kiln by a hinge, and can be secured with a closure device. A thermally insulated baffle is disposed within the control box and is spaced rearwardly from the front of the control box, and is essentially coextensive with the length and width of the control box to form a chimney. Louvers are provided to allow the flow of air through the chimney. A bank of plugs and sockets is exposed on the baffle, and interconnects the controls with the heater.

31 Claims, 4 Drawing Sheets



WB 002521

**Highly Confidential**  
**Attorneys' Eyes Only**

U.S. Patent

Dec. 19, 1995

Sheet 1 of 4

5,477,029

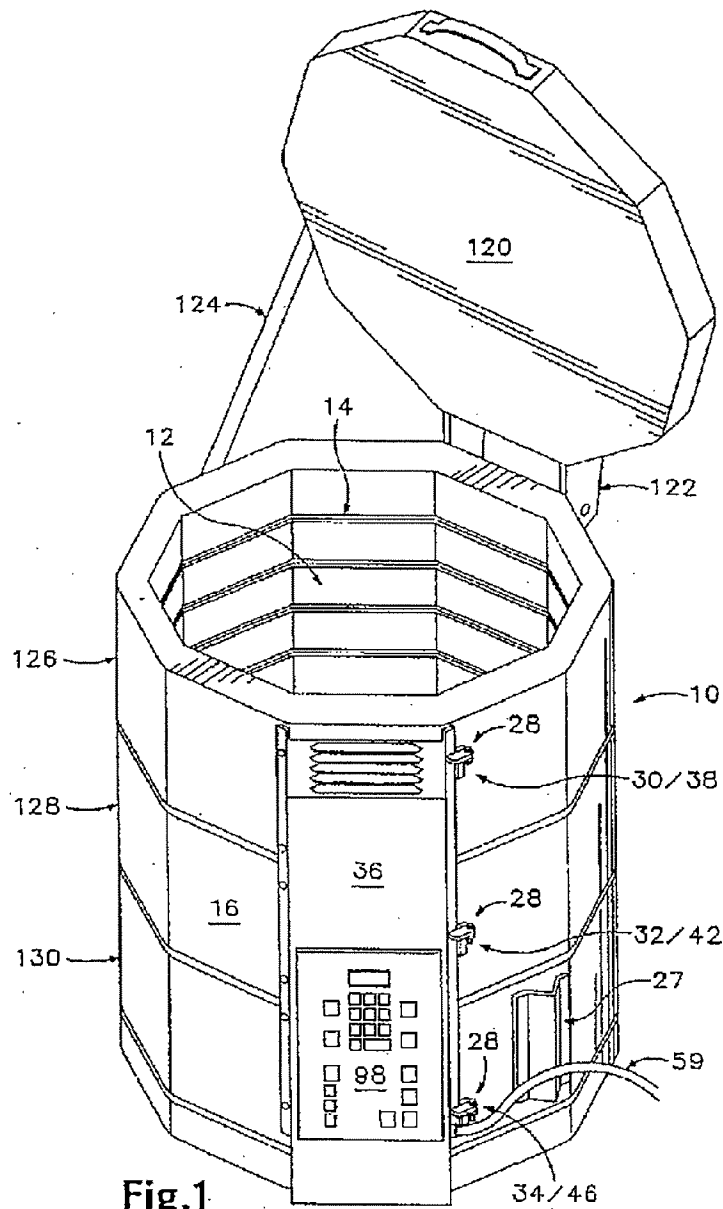


Fig.1

WB 002522

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Dec. 19, 1995

Sheet 2 of 4

5,477,029

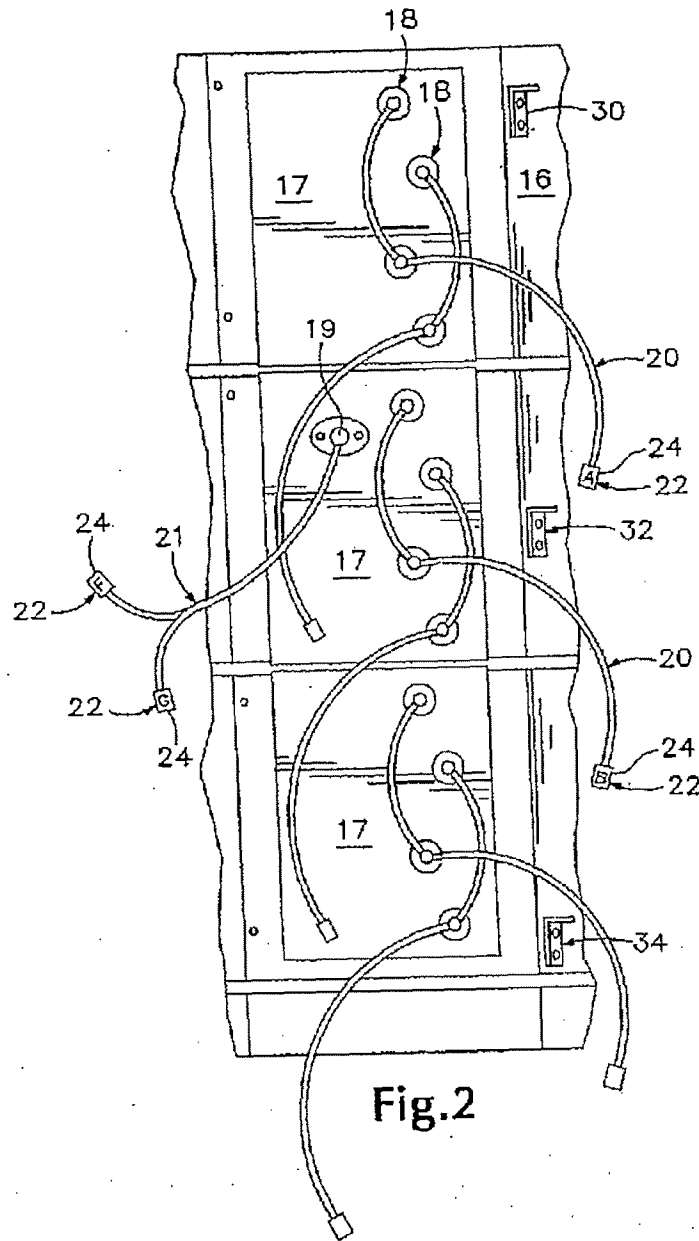


Fig.2

WB 002523

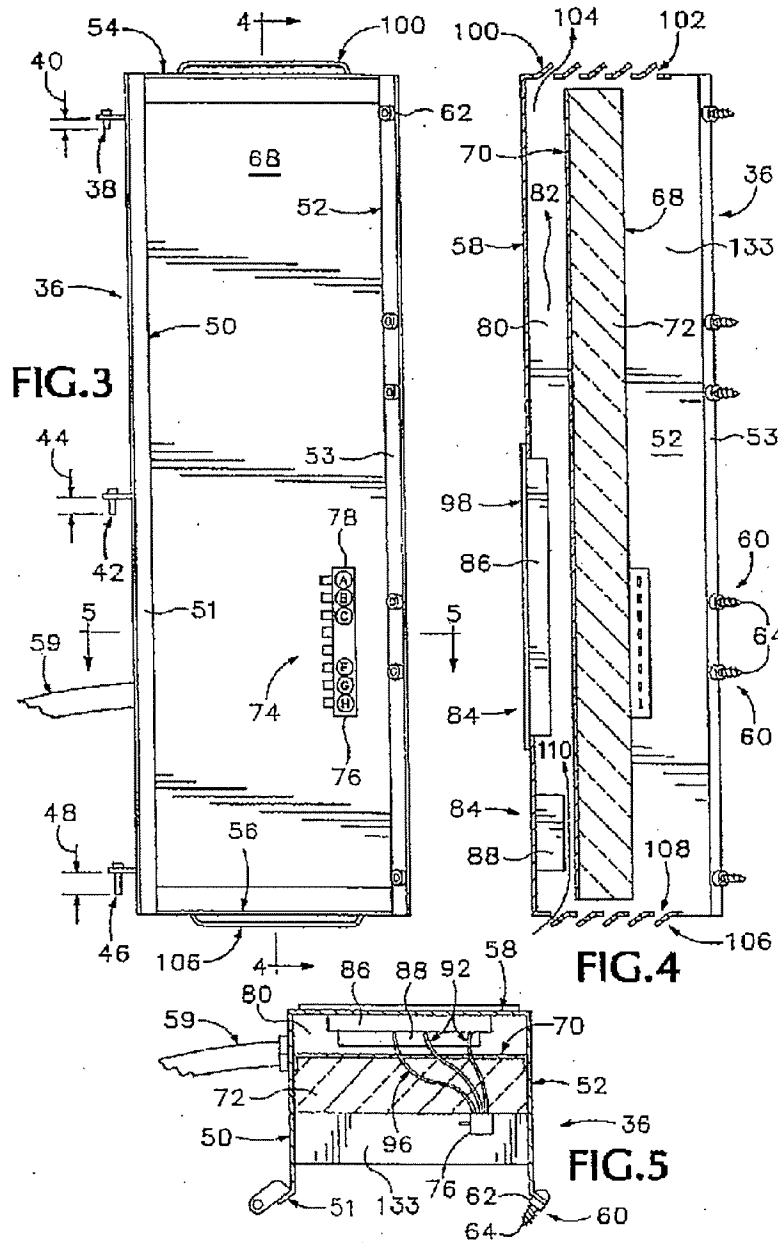
Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Dec. 19, 1995

Sheet 3 of 4

5,477,029



WB 002524

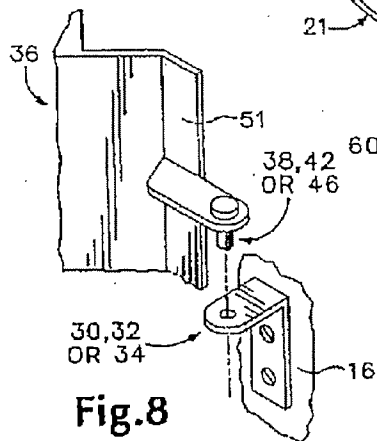
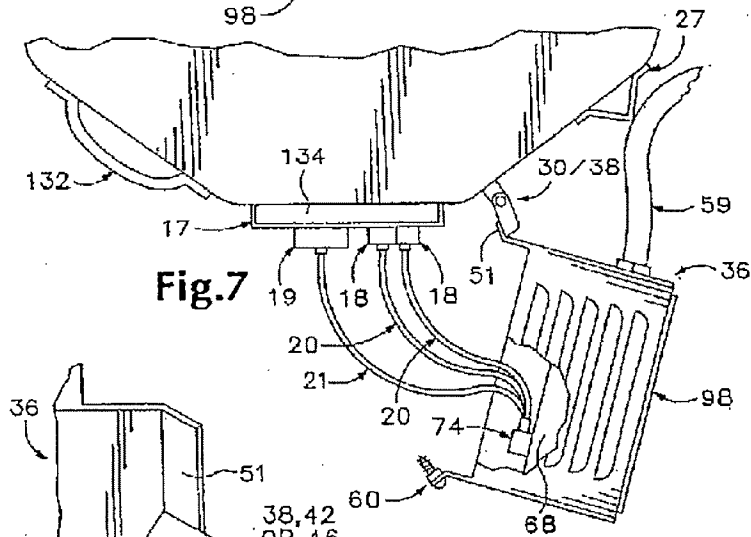
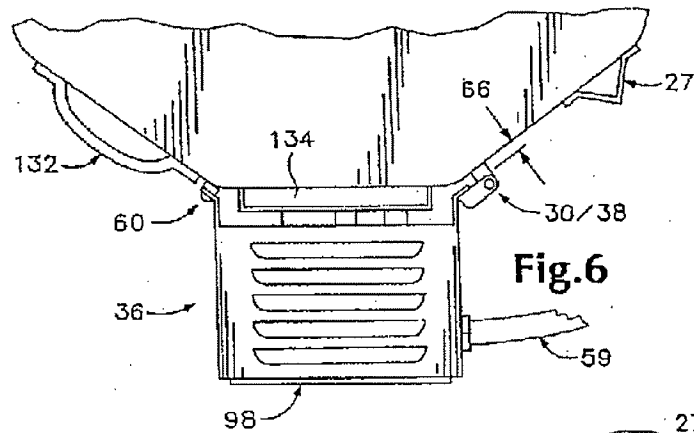
Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Dec. 19, 1995

Sheet 4 of 4

5,477,029



WB 002525

Highly Confidential  
Attorneys' Eyes Only

5,477,029

# 1 **KILN WITH HINGED CONTROL PANEL** **BACKGROUND OF THE INVENTION**

This invention relates to kilns, and more specifically to kilns used for firing pottery or ceramics. It is common in the art to heat such kilns with one or more electric heaters, and to control both the duration and the temperature of such heating with a heater controller. This controller is often contained in a control box attached to the kiln exterior. A power cord is attached to the control box to provide electricity for both the controller and the electric heater. The controller contains a timer to monitor the duration of heating. A temperature sensor incorporated in the kiln is connected to the controller to sense the temperature in the interior of the kiln. The controller can then regulate the electric power supplied to the electric heater to maintain the desired temperature for the desired duration.

When the kiln is operational, it produces temperatures of upwards of 2000 degrees Fahrenheit. While kilns are lined with firebricks, which provide some insulation, the exterior of the kiln still gets hot. Since the control box is mounted on the hot exterior, and the heat can damage the controller, a kiln that is regularly used requires frequent maintenance. This maintenance usually includes accessing the wires connected to the heater and the outputs from the controller. In a traditional kiln, this requires that the control box be completely removed from the kiln. The control box is often quite heavy, and unless the wires connecting the controls to the heater are exceedingly long, the control box must be supported in an upright position so that access may be had to the wiring while the controls are still connected to the electric heater. Because of the weight and size of the control box, this is often quite awkward. Should more complete maintenance be required, the wires connected to the controls and heater must be disconnected so that the control box can be completely separated from the kiln and placed on a workbench for further maintenance. Connecting and disconnecting the wires is cumbersome because there are often several wires to be connected, and because the heavy control box must be supported while making these connections, as described above.

One object of the invention is to improve the attachment means for a control box in a kiln assembly.

Another object of the invention is to improve the thermal protection provided for the controls contained within the control box of a kiln assembly.

A further object of the invention is to increase the cooling effect of air within the control box.

Another object of the invention is to improve the attachment and connection of the control box to a sectionalized kiln.

Yet another object is to create a chimney within a control box attached to a kiln assembly, wherein the chimney increases the dissipation of heat from the controls contained in the control box.

The preferred embodiment of the invention herein described embraces a kiln assembly that incorporates the following: a control box that allows for easy attachment and detachment of the control box from a kiln; wiring connectors that allow for easy interconnection and disconnection of the controls to the heater; and a configuration of the control box that allows for improved thermal protection and ventilation of the controllers contained within the control box.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a perspective view of the kiln of the present invention, taken from the top and front of the kiln, showing

2

the control box attached to the kiln and in its closed position;

FIG. 2 is a detail of the front elevation of the kiln of the present invention with the control box removed, showing the portion of the kiln exterior to which the control box is attached;

FIG. 3 is a rear elevation of the control box of the present invention, shown removed from the kiln;

FIG. 4 is a sectional side elevation of the control box shown in FIG. 3, taken generally about the line 4—4 shown in FIG. 3;

FIG. 5 is a sectional plan view of the control box shown in FIG. 3, taken generally about the line 5—5 shown in FIG. 3;

FIG. 6 is a top plan detail of the kiln, shown with the control box attached to the kiln and in its closed position;

FIG. 7 is a top plan detail of the kiln, shown with the control box attached to the kiln and in its open position, with the top of the control box being cut-away to show the plugs and sockets that interconnect the heater to the heater controls; and

FIG. 8 is an exploded detail perspective of a portion of the hinge of the present invention.

## **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to FIGS. 1 and 2, the kiln assembly of the preferred embodiment is indicated generally at 10 in the form of an upright kiln body with an attached control box. The body defines an enclosed space, or kiln interior, indicated generally at 12, and electric heaters 14 are shown disposed within the kiln interior. The kiln exterior is shown generally at 16.

It is common in the art for such heaters to be made from formed resistance wire, with the wire being bent to form tabs (not shown) at either end of the heater to which electric current can be supplied to generate the required heat. Heater tabs extend from kiln interior 12 to kiln exterior 16, pass through mounting plate 17, and are normally surrounded by insulators 18. A temperature sensor 19 is mounted on mounting plate 17, and penetrates kiln exterior 16 to sense the temperature inside the kiln. Electrically conductive flexible wires 20 can then be connected to the heater tabs to supply the necessary electric current, and are shown with sockets 22 attached to one end. Similarly, wire 21 can be connected to temperature sensor 19, and is shown with sockets 22 attached. Sockets 22 thus hang from adjacent kiln exterior 16 until connected to plugs, as described below. Each socket 22 is provided with a unique identifier, shown generally at 24. Sockets 22 can be identical in size, or each socket 22 can be sized as required by the electrical loads or other physical requirements for each connector. Electrically conductive wires can be referred to more generally as conductors.

In the preferred embodiment, a cable bumper 27 is attached to exterior 16 in the form of a piece of bent metal attached vertically to the lower portion of exterior 16.

A hinge with a vertical pivot axis is shown generally at 28. In the preferred embodiment, the parts of the hinge that are attached to kiln exterior 16 are shown as upper receptacle 30, middle receptacle 32, and lower receptacle 34. These receptacles are sized to receive a pin, as described below. The receptacles are attached to kiln exterior 16 in-line with each other vertically, and are adjacent cable bumper 27.

Referring to FIG. 3, a control box is shown generally at

WB 002526

**Highly Confidential  
Attorneys' Eyes Only**

5,477,029

36. The remaining parts of hinge 28 are preferably attached to the control box in the form of upper pin 38 having a length 40, middle pin 42 having a length 44, and lower pin 46 having a length 48. Pins 38, 42 and 46 are cylindrically shaped, and fit snugly within receptacles 30, 32 and 34, thus allowing each pin to be smoothly rotated about its long axis relative to the respective receptacle. The resulting pin-receptacle combinations form an upper hinge, middle hinge and lower hinge respectively. A typical hinge of the preferred embodiment is shown in detail in FIG. 8. The pins are of sufficient length that the pins are not dislodged from their respective receptacles by normal vibrations or bumping.

In the preferred embodiment, each pin is of a different length, so that when control box 36 is to be attached to the kiln, the longest pin is first mated with its corresponding receptacle, then the second longest pin is mated with its corresponding receptacle, and finally the remaining pin is mated with the remaining receptacle. Thus only one pin need be aligned with one receptacle at a time. When the pins and receptacles are so mated, control box 36 can be rotated about hinge 28 relative to kiln exterior 16.

In the preferred embodiment, lower pin 46 is the longest pin, and upper pin 38 is the shortest pin, thus lower pin 46 is first aligned with lower receptacle 34, then middle pin 42 is aligned with middle receptacle 32, and finally upper pin 38 is aligned with upper receptacle 30. Thus control box 36 can be attached to exterior 16 by inserting pins 38, 42 and 46 into receptacles 30, 32 and 34 respectively.

Receptacles 30, 32 and 34 and pins 38, 42 and 46 are sized such that when the pins and receptacles are mated, control box 36 is spaced away from kiln exterior 16, and is only in direct thermal contact with kiln exterior 16 through the pins and receptacles.

Many alternative configurations of pins 38, 42 and 46 and receptacles 30, 32 and 34 are possible. For smaller kilns, it may be desirable to use only a two-pin hinge, thus only upper receptacle 30, upper pin 38, lower receptacle 34 and lower pin 46 are necessary. Larger kilns may use more than three mated pairs of pins and receptacles. In addition, one or more of the mated pairs of pin and receptacle could be reversed, so that the pin is attached to kiln exterior 16, and the receptacle is attached to control box 36. The order of attachment is not crucial, thus any of the pins can be the longest pin. Furthermore, the advantage of only needing to align one pin with one receptacle at a time can be achieved by varying the vertical location of the receptacles, rather than the length of the pins.

In the preferred embodiment the control box is an elongate hollow box, shown best in FIGS. 3 through 5. Control box 36 is rectangular and has multiple sides, including a first side 50, a second side 52, a top 54, a bottom 56, and a front 58. Second side 52 is spaced horizontally from first side 50. Top 54, bottom 56 and front 58 extend from first side 50 to second side 52 to define a hollow interior with an open back. Electric power supply conductors in the form of flexible power cable 59 are attached to control box 36 to provide power to the control box. Power cable 59 is preferably attached to the lower portion of first side 50. Attached to second side 52 is a closure device 60 shown in the form of a spacer 62 through which screw 64 extends to penetrate the kiln exterior. Spacer 62 is preferably a washer fixedly attached to second side 52.

When control box 36 is attached to exterior 16 by hinge 28, and the control box is in its closed position as shown in FIG. 6, it will be seen that first side 50 and second side 52 each have an edge that is adjacent to exterior 16. First side

50 can be bent outwardly at the edge adjacent to exterior 16 to form first flange 51. It has been found that first flange 51 facilitates attachment of the pins to first side 50. Second side 52 can be bent outwardly at the edge adjacent to exterior 16 to form second flange 53. It has been found that second flange 53 facilitates attachment of closure device 60 to second side 52.

Once control box 36 is attached to exterior 16 by hinge 28, it can be held in its closed position by closure device 60. Specifically, this is done by screwing screw 64 into exterior 16. When control box 36 is thus attached, a gap shown generally at 66 remains between control box 36 and exterior 16. Control box 36 is only in direct thermal contact with exterior 16 at the pins attached to first side 50, and at closure device 60 attached to second side 52. First flange 51 and second flange 53 are essentially parallel to the plane of exterior 16, and the open back of the control box faces the kiln exterior.

Referring to FIGS. 3 through 5, additional elements of control box 36 will now be described. A thermally insulated baffle 68, which in the preferred embodiment is made from a metal plate 70 to which fiber insulation 72 is attached, is shown disposed within the hollow interior of control box 36 with a length and width that is essentially coextensive with the length and width of the box. The baffle is spaced rearwardly away from front 58. When thus installed, thermally insulated baffle 68 forms a heat shield that thermally insulates the air space formed between baffle 68 and front 58. The air space between thermally insulated baffle 68 and front 58 forms a chimney, labeled generally at 80, through which air can flow by convective currents shown generally as arrow 82.

A bank of plugs 74, shown mounted in a terminal strip 76 labeled with unique identifiers 78, is shown attached to thermally insulated baffle 68. The bank of plugs need not be attached to the baffle, nor mounted in a terminal strip, however this makes for easier interconnection and disconnection of the controls to the heater. In the preferred embodiment, terminal strip 76 is a through-panel type terminal strip, thus providing an electrical connection through baffle 68.

A heater controller, shown generally as control components 84, is disposed within chimney 80. In the preferred embodiment, heater controller 84 is in the form of electronic controls 86 plus relays and transformers shown generally at 88. Electric controller outputs from heater controller 84 are shown in the form of output wires 92. Electric controller inputs to heater controller 84 are shown in the form of input wires 96. Referring now to FIG. 1, heater controller 84 includes a control panel 98.

Sockets 22 and plugs 74 form electrically mated pairs of connectors, whereby mating a socket with a plug interconnects a heater to an electric output. Any of the electrically mated pairs could be reversed if desired, such that the plug is attached to wire 20 and/or 21 and the socket is attached to the electric output wire 92 and/or input wire 96, without changing the functionality of the invention. As discussed above, the size and arrangement of the mated pairs can be varied as required by the electrical or other physical attributes of the inputs and outputs.

If access is needed to any of the components contained in the control box, closure device 60 is operated to allow the control box to rotate about hinge 28. When control box 36 is thus rotated about hinge 28, cable bumper 37 prevents power cable 59 from coming in direct contact with exterior 16, thus preventing damage to power cable 59 if exterior 16 is hot at the time. With control box 36 in its open position,

WB 002527

Highly Confidential  
Attorneys' Eyes Only

5,477,029

5

wires 20 and 21, sockets 22 and plugs 74 are readily accessible, and can be operated on without the need for auxiliary support of control box 36. If it is necessary to conduct more extensive diagnostics, sockets 22 can be easily unplugged from plugs 74, and control box 36 can then be removed from the kiln by simply lifting the control box, thus unmatting pins 38, 42 and 46 from receptacles 30, 32 and 34. After completing diagnostics, control box 36 can be easily reattached to the kiln by remating the pins and receptacles. Sockets 22 are then plugged back onto plugs 74, matching each socket identifier 24 to the corresponding plug identifier 78 to insure that the correct socket is mated with the correct plug.

Louvers are provided in the top and bottom of control box 36, shown in the form of top louvers 108 having top openings 102, and bottom louvers 106 having bottom openings 108. Top louvers 108 are directed towards kiln exterior 16, and bottom louvers 106 are directed away from kiln exterior 16, as is best shown in FIG. 4. Air flows into bottom openings 108 as shown by air-flow-in arrow 110, and air flows out of top openings 102 as shown by air-flow-out arrow 104. While it would be possible to force the flow of air through chimney 80 by the use of a fan, in the preferred embodiment air flows by convective currents. By directing bottom louvers 106 away from exterior 16, air that is cooler than the air next to exterior 16 is drawn into chimney 80.

Referring to FIG. 1, kiln 10 further includes a lid 120 attached to kiln 10 by lid hinge 122. When lid 120 is in an open position, it can be held in that position by lid support 124. The kiln can be made up of separable sections, shown generally as 126, 128 and 130. Such kilns are referred to more generally as sectionalized kilns. Handles are attached to the exterior of each section, and are used to separate and carry the sections.

From the foregoing description it will be seen that the preferred embodiment that has been described is a kiln wherein the control box is easily attached and removed from the kiln. The control box has a hinge that supports the control box on one side, so that the control box can be pivoted relative to the kiln to allow access to the connections for the controls. The control box can be fixed in one place by the closure device, and most of the conductors attached to the control box are flexible to allow easy rotation of the control box about the hinge. The control box of the present invention is particularly applicable to sectionalized kilns, because the kilns are designed to be separated for maintenance procedures. Thus the fact that the control box is easily attached and removed from the kiln, and that the user of the kiln has easy access to the connections for the controls, greatly facilitates such maintenance procedures.

Once the control box has been opened, the required interconnections between the controls and the heater are easily accessible, and are in the form of plugs and sockets for easy connection and disconnection. When the plugs are disconnected from the sockets, the control box is easily lifted from the kiln, thus disengaging the pins from the receptacles and allowing the control box to be completely removed from the kiln.

Thermal protection for the controls is improved by providing a baffle that essentially covers all of the controls. Furthermore, the baffle is spaced away from the front of the control box, thus providing a chimney for improved air flow to cool the controls. The louvers on the top and bottom of the control box are placed to further improve the air flow through the chimney. By attaching a mounting plate to the exterior of the kiln, and disposing the mounting plate

6

between the baffle and the exterior, a second chimney 133, as shown in FIGS. 4 and 5, is formed between the mounting plate and the baffle, and a third chimney 134, as shown in FIGS. 6 and is formed between the mounting plate and the exterior of the kiln, thus providing additional convective currents for cooling the controls.

While preferred embodiments and best modes of the invention have been disclosed, variations may be made thereto without departing from the spirit of the invention.

It is claimed and desired to secure by Letters Patent:

1. A kiln assembly comprising:
  - a) an upright body defining an enclosed space and having an exterior;
  - a) a heater associated with the body to heat the enclosed space;
  - a) a control box disposed on the body, where the control box includes an interior; and
  - a) a hinge mounting the control box to the exterior, and permitting the control box to be pivoted around a vertical axis along the direction of the upright body to permit access to the interior of the control box.
2. The kiln assembly of claim 1 wherein the hinge comprises:
  - a) an upper pin part and an upper receptacle part, with one part connected to the exterior and the other part to the control box; and
  - a) a lower pin part and a lower receptacle part, with one part connected to the exterior and the other part to the control box;
 where the upper pin part and the upper receptacle part are spaced from the lower pin part and the lower receptacle part; and
  - where the vertical axis is defined by the upper pin part and upper receptacle part and the lower pin part and the lower receptacle part so that the control box pivots around both the upper pin part and upper receptacle part and the lower pin part and the lower receptacle part.
3. The kiln assembly of claim 2, wherein the length of each pin part and the location of each receptacle part is such that the control box is attached to the exterior by first mating one of the pin parts with the corresponding receptacle part and then mating the other pin part with the other receptacle part.
4. The kiln assembly of claim 2, further comprising a middle pin part and a middle receptacle part with one part connected to the exterior and the other part to the control box, where the middle pin part and the middle receptacle part are positioned between the upper and lower pin parts.
5. The kiln assembly of claim 4, wherein the length of each pin part and the location of each receptacle part is such that the control box is attached to the exterior by first mating one of the pin parts with the corresponding receptacle part, then mating another of the pin parts with the corresponding receptacle part, and then mating the remaining pin part with the remaining receptacle part.
6. The kiln assembly of claim 2, wherein the receptacle parts and the pin parts are sized so that the control box is spaced away from the exterior, and the control box is only in direct thermal contact with the exterior at the pin parts and receptacle parts.
7. The kiln assembly of claim 2, wherein the control box further comprises a closure device configured to selectively fix the control box to the exterior and to prevent the control box from pivoting.
8. The kiln assembly of claim 7, wherein:

WB 002528

Highly Confidential  
Attorneys' Eyes Only

5,477,029

7

the receptacle parts and the pin parts are sized so that the control box is spaced away from the exterior; the closure device includes a spacer disposed between the control box and the exterior; and the control box is only in direct thermal contact with the exterior at the pin parts, receptacle parts and closure device.

9. The kiln assembly of claim 8, wherein the closure device includes a screw that extends through the spacer and penetrates the exterior.

10. The kiln assembly of claim 2, wherein the control box has a front that faces outwardly, and further comprising:

a thermally insulated baffle disposed within the interior of the control box and spaced rearwardly away from the front of the control box, the baffle being substantially coextensive with the length and width of the control box to form a chimney between the baffle and the front; and

a heater controller disposed within the chimney, wherein the baffle forms a heat shield for protecting the heater controller from heat when the kiln is operational.

11. The kiln assembly of claim 10, further comprising:

a plurality of electric outputs from the heater controller; and

a bank of plugs exposed on the baffle facing the kiln, and interconnecting the electric outputs to the heater via electrically conductive wires.

12. The kiln assembly of claim 11, wherein the plugs are fixed in a strip.

13. The kiln assembly of claim 12, wherein the strip is attached to the baffle.

14. The kiln assembly of claim 11, wherein each plug is labelled with a unique identifier, and each corresponding socket is labelled with a corresponding identifier to allow easy identification for mating each plug with each corresponding socket.

15. The kiln assembly of claim 10, further comprising louvers on the control box to allow the flow of air through the chimney to cool the heater controller.

16. The kiln assembly of claim 15, wherein:

the control box further includes a bottom and a top; the louvers are located on the bottom and the top; the louvers on the bottom are directed away from the exterior to better draw cool air into the chimney; and the louvers on the top are directed towards the exterior.

17. The kiln assembly of claim 1, which further comprises:

an insulated baffle extending the length and width of the control box within the control box and spaced towards to the back of the control box from the front of the control box; and

control components disposed within the control box and being located intermediate the baffle and the front of the control box.

18. The kiln assembly of claim 17, which further includes electric power supply conductors for supplying current for heating the kiln and a bank of plugs disposed on the baffle facing the kiln connecting the conductors and control components.

19. The kiln assembly of claim 1 wherein the body is separable into at least two sections.

20. A kiln assembly comprising:

a body defining an enclosed space and having an exterior and interior and a top opening;

heater coils adjacent the body's interior to heat the enclosed space;

8

a lid adjacent the body for closing the top opening;

a control box;

a hinge connecting the control box to the body's exterior and allowing the control box to pivot;

a heater controller disposed within the control box to control the heat produced by the heater coils, wherein the heater controller has a plurality of electric outputs; and

a connection between the electric outputs and the heater coils.

21. A kiln assembly comprising:

a body defining an enclosed space and having an exterior;

a heater associated with the body to heat the enclosed space;

a hollow control box attached to the exterior, wherein the control box has a bottom and a top;

louvers on the control box to allow the flow of air through the control box;

wherein the louvers are located on the bottom and the top; wherein the louvers on the bottom are directed away from the exterior; and

wherein the louvers on the top are directed towards the exterior.

22. A kiln assembly comprising:

a body defining an enclosed space and having an exterior;

a heater associated with the body to heat the enclosed space;

a hollow control box attached to the exterior, wherein the control box has a front that faces outward and an open back that faces the exterior;

a thermally insulated baffle disposed within the control box spaced rearwardly from the front, and having a length and width substantially coextensive with the length and width of the control box to form a chimney between the baffle and the front; and

a heater controller disposed within the chimney, so that the baffle forms a heat shield protecting the heater controller from heat when the kiln is operational.

23. The kiln assembly of claim 22, further comprising louvers on the control box to allow the flow of air through the chimney to cool the heater controller.

24. The kiln assembly of claim 23, wherein:

the control box includes a bottom and a top; the louvers are located on the bottom and the top; the louvers on the bottom are directed away from the exterior to better draw cool air into the chimney; and

the louvers on the top are directed towards the exterior.

25. The kiln assembly of claim 23, further comprising a mounting plate attached to the exterior and disposed between the thermally insulated baffle and the exterior to form a second chimney between the baffle and the mounting plate, and a third chimney between the mounting plate and the exterior.

26. A kiln assembly comprising:

a body defining an enclosed space and having an exterior and interior and a top opening;

heater coils adjacent the body's interior and substantially surrounding the enclosed space to heat the enclosed space;

a lid adjacent the body for closing the top opening;

a control box attached to the exterior;

a heater controller disposed within the control box,

WB 002529

Highly Confidential  
Attorneys' Eyes Only

5,477,029

9

wherein the heater controller has a plurality of electric outputs; and

a bank of plugs interconnecting the electric outputs to the heater coils via electrically conductive wires.

27. The kiln assembly of claim 26, wherein the plugs are fixed in a strip.

28. The kiln assembly of claim 27, wherein the strip is attached to the control box.

29. The kiln assembly of claim 28, further comprising sockets on the electrically conductive wires to connect with the bank of plugs, wherein each plug is labeled with a unique identifier, and each corresponding socket is labeled with a corresponding identifier to allow easy identification for mating each plug with each corresponding socket.

30. A kiln assembly comprising:

a body defining an enclosed space and having an exterior;

10

a heater associated with the body to heat the enclosed space;

a control box disposed on the body, where the control box includes an interior;

a first hinge mounting the control box to the exterior; and

a second hinge mounting the control box to the exterior;

where the first and second hinges are spaced apart and define an axis around which the control box is pivoted to permit access to the interior of the control box.

31. The kiln assembly of claim 1 wherein the hinge comprises a cylindrical member and a receptacle having a circular aperture into which the cylindrical member may be inserted for rotation.

\* \* \* \* \*

WB 002530

Highly Confidential  
Attorneys' Eyes Only

WB 002531

**Highly Confidential  
Attorneys' Eyes Only**



US005734149A

## United States Patent [19]

Skutt et al.

[11] Patent Number: 5,734,149

[45] Date of Patent: Mar. 31, 1998

[54] KILN WITH HINGED CONTROL PANEL

5,285,355 2/1994 Chabert et al.

5,477,029 12/1995 Skutt et al. 219/090

[76] Inventors: James E. Skutt, 4523 SW. Cullen  
Bldg., Portland, Oreg. 97221; Michael  
J. Humpel, 4912 NE. 269th Ave.,  
Camas, Wash. 98607

## OTHER PUBLICATIONS

Duncan Kiln Catalog, Jan., 1992, U.S.A.  
Paragon Kilns catalog, Paragon Industries, Inc., U.S.A.  
Evenheat Kiln Inc. catalog, 1992, U.S.A.  
Programatic Kilns catalog, L & L Mfg. Co. Inc., Feb. 1993,  
U.S.A.  
High Fire Kilns Plus! catalog, Knight Kiln Co., Feb. 1993,  
U.S.A.  
Cress M-Series catalog, Cress Mfg. Company, U.S.A.  
Cress Firemate brochure, Cress Mfg. Company, U.S.A.  
Aim Kilns catalog #209, Aim Kiln Mfg. Co., U.S.A.  
Skutt Kilns catalog, Skutt Ceramic Products, Inc., Aug.  
1992, U.S.A.  
Stanley Firebird T Range Kiln Brochure.

[21] Appl. No.: 573,368

[22] Filed: Dec. 15, 1995

## Related U.S. Application Data

[63] Continuation of Ser. No. 138,939, Jan. 26, 1994, Pat. No.  
5,477,029.

[51] Int. Cl.<sup>5</sup> F27B 5/14

[52] U.S. CL. 219/390; 219/492; 219/521;  
361/688; 432/250

[58] Field of Search 219/390, 492,  
219/493, 494, 497, 521, 490, 482, 483,  
400; 432/250; 165/1, 47; 174/10, 15, 7,  
16, 1, 17 CT, 50; 361/714, 784, 383, 389,  
688

[56] References Cited

## U.S. PATENT DOCUMENTS

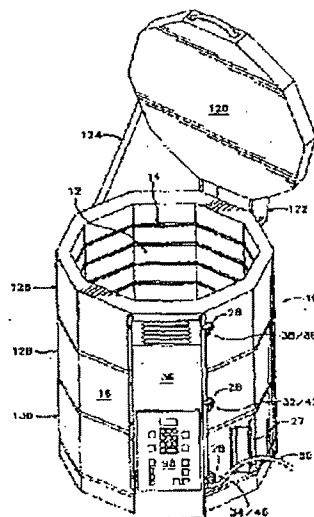
3,631,663 8/1972 Alberts.  
3,958,923 5/1976 Demczuk.  
4,215,265 7/1980 White.  
4,500,940 2/1985 Greene.  
4,535,386 8/1985 Frey, Jr. et al.  
4,705,930 11/1987 Saffner, Jr. et al.  
4,742,864 5/1988 Duell et al.  
4,837,423 6/1989 Peterson et al.  
4,897,526 1/1990 Anthony.

Primary Examiner—Tu B. Hoang  
Attorney, Agent, or Firm—Kotisch, Hartwell, Dickinson,  
McCormack & Heuser

## [57] ABSTRACT

A kiln assembly is disclosed, including a heated kiln with an attached control box containing controls connected to the kiln heater. The control box is mounted on the kiln by a hinge, and can be secured with a closure device. A thermally insulated baffle is disposed within the control box and is spaced rearwardly from the front of the control box, and is essentially coextensive with the length and width of the control box to form a chimney. Louvers are provided to allow the flow of air through the chimney. A bank of plugs and sockets is exposed on the baffle, and interconnects the controls with the heater.

28 Claims, 4 Drawing Sheets



WB 002532

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Mar. 31, 1998

Sheet 1 of 4

5,734,149

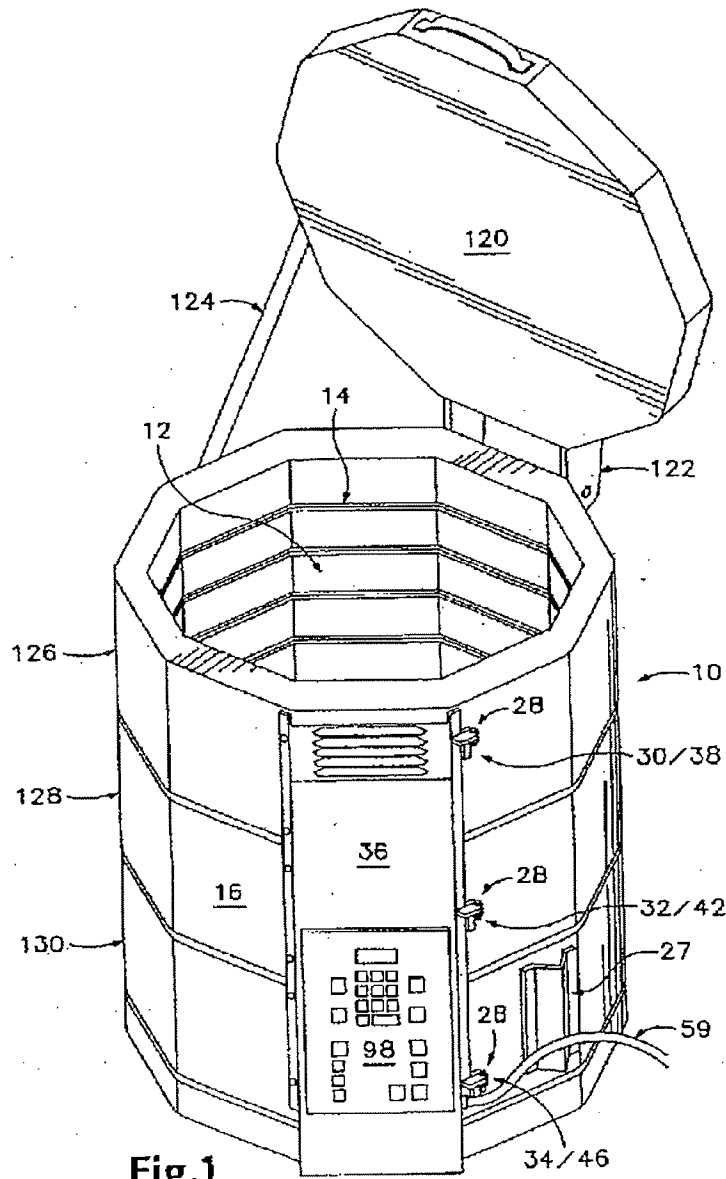


Fig.1

WB 002533

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Mar. 31, 1998

Sheet 2 of 4

5,734,149

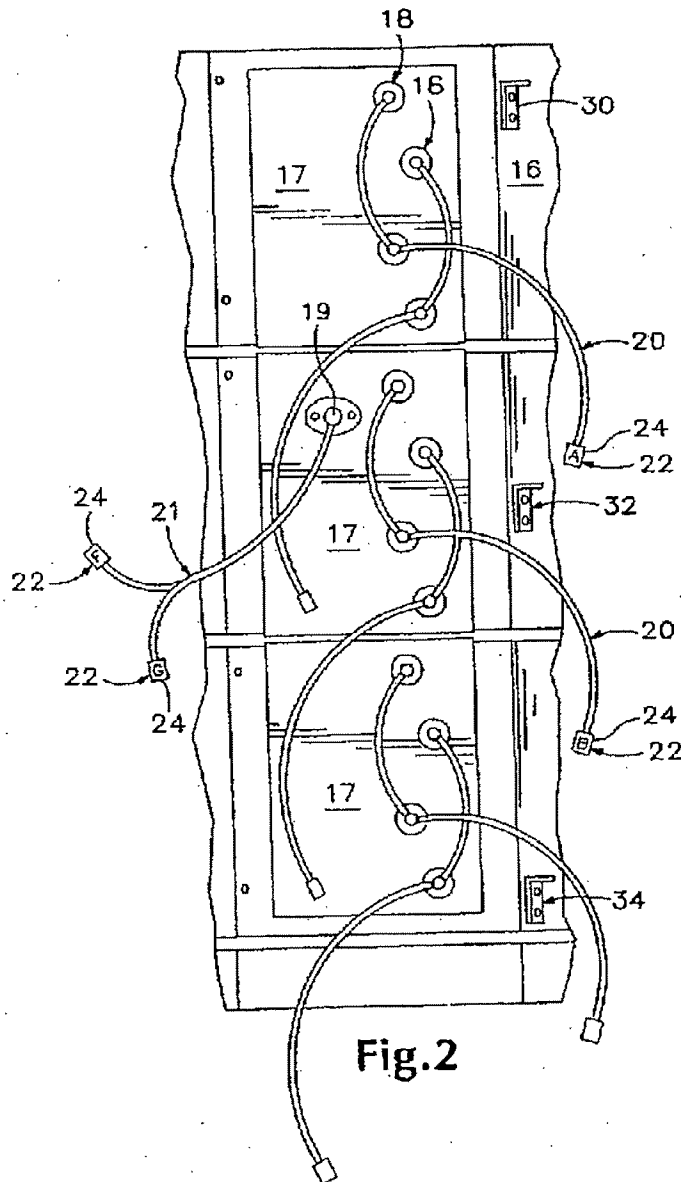


Fig.2

WB 002534

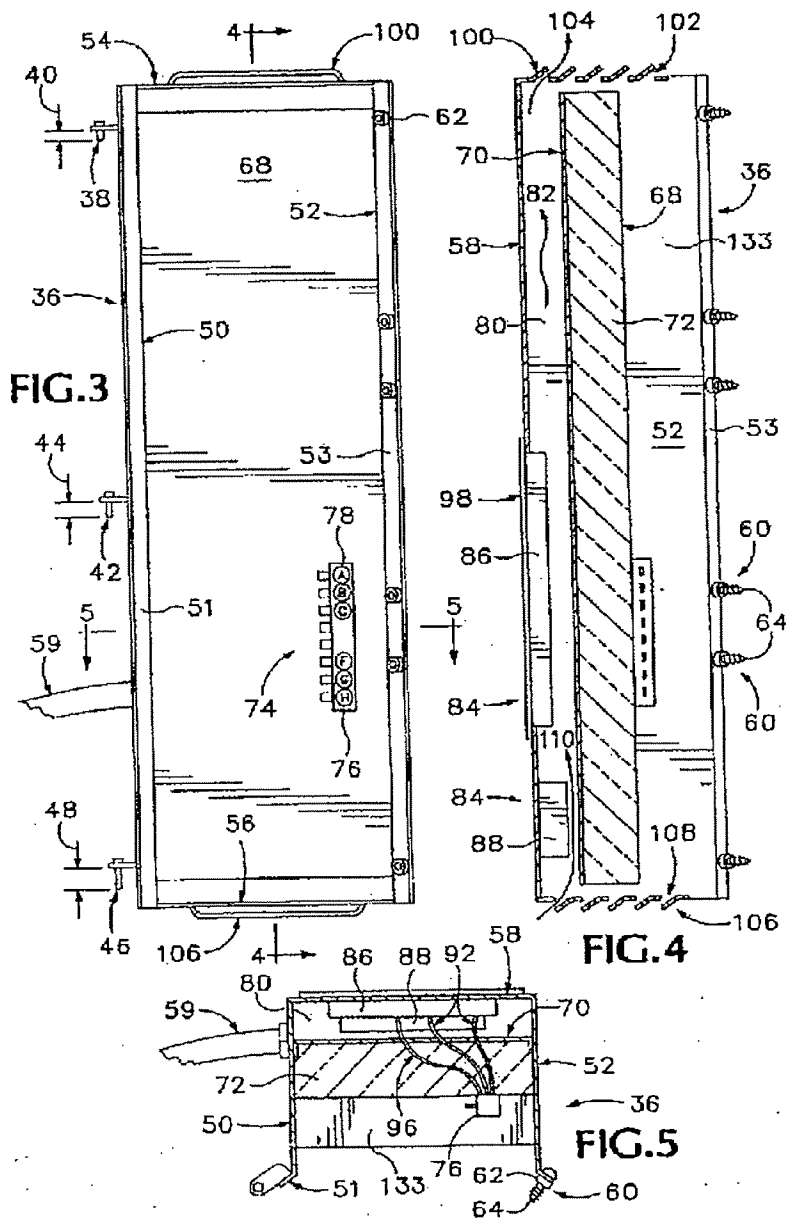
Highly Confidential  
Attorneys' Eyes Only

## U.S. Patent

Mar. 31, 1998

Sheet 3 of 4

5,734,149



WB 002535

**Highly Confidential  
Attorneys' Eyes Only**

U.S. Patent

Mar. 31, 1998

Sheet 4 of 4

5,734,149

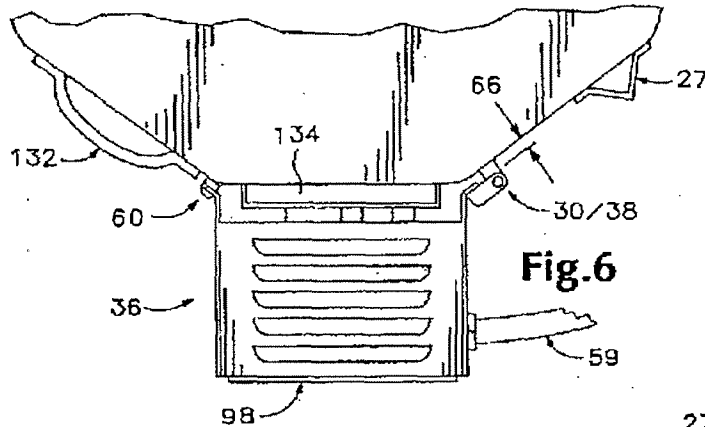


Fig. 6

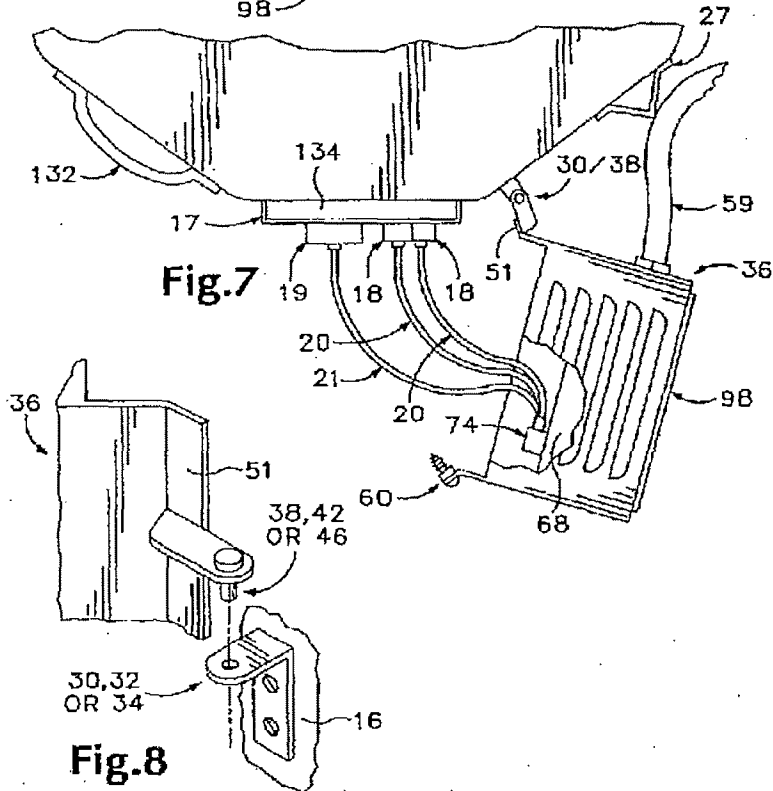


Fig. 7

Fig. 8

WB 002536

Highly Confidential  
Attorneys' Eyes Only

5,734,149

# KILN WITH HINGED CONTROL PANEL

## CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation of Ser. No. 08/188,959 filed Jan. 28, 1994, now U.S. Pat. No. 5,477,029.

## BACKGROUND AND SUMMARY OF THE INVENTION

This invention relates to kilns, and more specifically to kilns used for firing pottery or ceramics. It is common in the art to heat such kilns with one or more electric heaters, and to control both the duration and the temperature of such heating with a heater controller. This controller is often contained in a control box attached to the kiln exterior. A power cord is attached to the control box to provide electricity for both the controller and the electric heater. The controller contains a timer to monitor the duration of heating. A temperature sensor incorporated in the kiln is connected to the controller to sense the temperature in the interior of the kiln. The controller can then regulate the electric power supplied to the electric heater to maintain the desired temperature for the desired duration.

When the kiln is operational, it produces temperatures of upwards of 2000 degrees Fahrenheit. While kilns are lined with firebricks, which provide some insulation, the exterior of the kiln still gets hot. Since the control box is mounted on the hot exterior, and the heat can damage the controller, a kiln that is regularly used requires frequent maintenance. This maintenance usually includes accessing the wires connected to the heater and the outputs from the controller. In a traditional kiln, this requires that the control box be completely removed from the kiln. The control box is often quite heavy, and unless the wires connecting the controls to the heater are exceedingly long, the control box must be supported in an upright position so that access may be had to the wiring while the controls are still connected to the electric heater. Because of the weight and size of the control box, this is often quite awkward. Should more complete maintenance be required, the wires connected to the controls and heater must be disconnected so that the control box can be completely separated from the kiln and placed on a workbench for further maintenance. Connecting and disconnecting the wires is cumbersome because there are often several wires to be connected, and because the heavy control box must be supported while making these connections, as described above.

One object of the invention is to improve the attachment means for a control box in a kiln assembly.

Another object of the invention is to improve the thermal protection provided for the controls contained within the control box of a kiln assembly.

A further object of the invention is to increase the cooling effect of air within the control box.

Another object of the invention is to improve the attachment and connection of the control box to a sectionalized kiln.

Yet another object is to create a chimney within a control box attached to a kiln assembly, wherein the chimney increases the dissipation of heat from the controls contained in the control box.

The preferred embodiment of the invention herein described embraces a kiln assembly that incorporates the following: a control box that allows for easy attachment and detachment of the control box from a kiln; wiring connectors

that allow for easy interconnection and disconnection of the controls to the heater; and a configuration of the control box that allows for improved thermal protection and ventilation of the controllers contained within the control box.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the kiln of the present invention, taken from the top and front of the kiln, showing the control box attached to the kiln and in its closed position;

FIG. 2 is a detail of the front elevation of the kiln of the present invention with the control box removed, showing the portion of the kiln exterior to which the control box is attached;

FIG. 3 is a rear elevation of the control box of the present invention, shown removed from the kiln;

FIG. 4 is a sectional side elevation of the control box shown in FIG. 3, taken generally about the line 4-4 shown in FIG. 3;

FIG. 5 is a sectional plan view of the control box shown in FIG. 3, taken generally about the line 5-5 shown in FIG. 3;

FIG. 6 is a top plan detail of the kiln, shown with the control box attached to the kiln and in its closed position;

FIG. 7 is a top plan detail of the kiln, shown with the control box attached to the kiln and in its open position, with the top of the control box being cut-away to show the plugs and sockets that interconnect the heater to the heater controls; and

FIG. 8 is an exploded detail perspective of a portion of the hinge of the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 1 and 2, the kiln assembly of the preferred embodiment is indicated generally at 10 in the form of an upright kiln body with an attached control box. The body defines an enclosed space, or kiln interior, indicated generally at 12, and electric heaters 14 are shown disposed within the kiln interior. The kiln exterior is shown generally at 16.

It is common in the art for such heaters to be made from formed resistance wire, with the wire being bent to form tabs (not shown) at either end of the heater to which electric current can be supplied to generate the required heat. Heater tabs extend from kiln interior 12 to kiln exterior 16, pass through mounting plate 17, and are normally surrounded by insulators 18. A temperature sensor 19 is mounted on mounting plate 17, and penetrates kiln exterior 16 to sense the temperature inside the kiln. Electrically conductive flexible wires 20 can then be connected to the heater tabs to supply the necessary electric current, and are shown with sockets 22 attached to one end. Similarly, wire 21 can be connected to temperature sensor 19, and is shown with sockets 22 attached. Sockets 22 thus hang free adjacent kiln exterior 16 until connected to plugs, as described below. Each socket 22 is provided with a unique identifier, shown generally at 24. Sockets 22 can be identical in size, or each socket 22 can be sized as required by the electrical loads or other physical requirements for each connector. Electrically conductive wires can be referred to more generally as conductors.

In the preferred embodiment, a cable bumper 27 is attached to exterior 16 in the form of a piece of bent metal attached vertically to the lower portion of exterior 16.

A hinge with a vertical pivot axis is shown generally at 28. In the preferred embodiment, the parts of the hinge that are

WB 002537

Highly Confidential  
Attorneys' Eyes Only

WB 002538

[illegible]

5,734,149

5

If access is needed to any of the components contained in the control box, closure device 60 is operated to allow the control box to rotate about hinge 28. When control box 36 is thus rotated about hinge 28, cable bumper 27 prevents power cable 59 from coming in direct contact with exterior 16, thus preventing damage to power cable 59 if exterior 16 is hot at the time. With control box 36 in its open position, wires 20 and 21, sockets 22 and plugs 74 are readily accessible, and can be operated on without the need for auxiliary support of control box 36. If it is necessary to conduct more extensive diagnostics, sockets 22 can be easily unplugged from plugs 74, and control box 36 can then be removed from the kiln by simply lifting the control box, thus unmooring pins 38, 42 and 46 from receptacles 30, 32 and 34. After completing diagnostics, control box 36 can be easily reattached to the kiln by reinserting the pins and receptacles. Sockets 22 are then plugged back onto plugs 74, matching each socket identifier 24 to the corresponding plug identifier 78 to ensure that the correct socket is mated with the correct plug.

Louvers are provided in the top and bottom of control box 36, shown in the form of top louvers 100 having top openings 102, and bottom louvers 106 having bottom openings 108. Top louvers 100 are directed towards kiln exterior 16, and bottom louvers 106 are directed away from kiln exterior 16, as is best shown in FIG. 4. Air flows into bottom openings 108 as shown by air-flow-in arrow 110, and air flows out of top openings 102 as shown by air-flow-out arrow 104. While it would be possible to force the flow of air through chimney 80 by the use of a fan, in the preferred embodiment air flows by convective currents. By directing bottom louvers 106 away from exterior 16, air that is cooler than the air next to exterior 16 is drawn into chimney 80.

Referring to FIG. 1, kiln 10 further includes a lid 120 attached to kiln 10 by lid hinge 122. When lid 120 is in an open position, it can be held in that position by lid support 124. The kiln can be made up of separable sections, shown generally as 126, 128 and 130. Such kilns are referred to more generally as sectionalized kilns. Handles are attached to the exterior of each section, and are used to separate and carry the sections.

From the foregoing description it will be seen that the preferred embodiment that has been described is a kiln wherein the control box is easily attached and removed from the kiln. The control box has a hinge that supports the control box on one side, so that the control box can be pivoted relative to the kiln to allow access to the connections for the controls. The control box can be fixed in one place by the closure device, and most of the conductors attached to the control box are flexible to allow easy rotation of the control box about the hinge. The control box of the present invention is particularly applicable to sectionalized kilns, because the kilns are designed to be separated for maintenance procedures. Thus the fact that the control box is easily attached and removed from the kiln, and that the user of the kiln has easy access to the connections for the controls, greatly facilitates such maintenance procedures.

Once the control box has been opened, the required interconnections between the controls and the heater are easily accessible, and are in the form of plugs and sockets for easy connection and disconnection. When the plugs are disconnected from the sockets, the control box is easily lifted from the kiln, thus disengaging the pins from the receptacles and allowing the control box to be completely removed from the kiln.

Thermal protection for the controls is improved by providing a baffle that essentially covers all of the controls.

6

Furthermore, the baffle is spaced away from the front of the control box, thus providing a chimney for improved air flow to cool the controls. The louvers on the top and bottom of the control box are placed to further improve the air flow through the chimney. By attaching a mounting plate to the exterior of the kiln, and disposing the mounting plate between the baffle and the exterior, a second chimney 133, as shown in FIGS. 4 and 5, is formed between the mounting plate and the baffle, and a third chimney 134, as shown in FIGS. 6 and 7, is formed between the mounting plate and the exterior of the kiln, thus providing additional convective currents for cooling the controls.

While preferred embodiments and best modes of the invention have been disclosed, variations may be made thereto without departing from the spirit of the invention.

It is claimed and desired to secure by letters patent:

1. A kiln assembly comprising:

an upright body having an exterior;  
a heater operatively connected to the body to heat the body;

a control box disposed on the body and having a plurality of sides; and

a hinge mounting the control box to the exterior, and permitting the control box to be pivoted around a vertical axis to permit access to a first and a second one of the sides of the control box.

2. The kiln assembly of claim 1 wherein the hinge comprises:

an upper pin part and an upper receptacle part, with one part connected to the exterior and the other part to the control box; and

a lower pin part and a lower receptacle part, with one part connected to the exterior and the other part to the control box;

where the upper pin part and the upper receptacle part are spaced from the lower pin part and the lower receptacle part; and

where the vertical axis is defined by the upper pin part and upper receptacle part and the lower pin part and the lower receptacle part so that the control box pivots around both the upper pin part and upper receptacle part and the lower pin part and the lower receptacle part.

3. The kiln assembly of claim 2, wherein the length of each pin part and the location of each receptacle part is such that the control box is attached to the exterior by first mating one of the pin parts with the corresponding receptacle part and then mating the other pin part with the other receptacle part.

4. The kiln assembly of claim 2, further comprising a middle pin part and a middle receptacle part with one part connected to the exterior and the other part to the control box, where the middle pin part and the middle receptacle part are positioned between the upper and lower pin parts.

5. The kiln assembly of claim 4, wherein the length of each pin part and the location of each receptacle part is such that the control box is attached to the exterior by first mating one of the pin parts with the corresponding receptacle part, then mating another of the pin parts with the corresponding receptacle part, and then mating the remaining pin part with the remaining receptacle part.

6. The kiln assembly of claim 2, wherein the receptacle parts and the pin parts are sized so that the control box is spaced away from the exterior, and the control box is only in direct thermal contact with the exterior at the pin parts and receptacle parts.

WB 002539

Highly Confidential  
Attorneys' Eyes Only

5,734,149

7

7. The kiln assembly of claim 2, wherein the control box further comprises a closure device configured to selectively fix the control box to the exterior and to prevent the control box from pivoting.

8. The kiln assembly of claim 7, wherein:

the receptacle parts and the pin parts are sized so that the control box is spaced away from the exterior;

the closure device includes a spacer disposed between the control box and the exterior; and

the control box is only in direct thermal contact with the exterior at the pin parts, receptacle parts and closure device.

9. The kiln assembly of claim 8, wherein the closure device includes a screw that extends through the spacer and penetrates the exterior.

10. The kiln assembly of claim 2, wherein the control box has a front that faces outwardly, and further comprising:

a thermally insulated baffle disposed within the interior of the control box and spaced rearwardly away from the front of the control box, the baffle being substantially coextensive with the length and width of the control box to form a chimney between the baffle and the front; and

a heater controller disposed within the chimney, wherein the baffle forms a heat shield for protecting the heater controller from heat when the kiln is operational.

11. The kiln assembly of claim 10, further comprising: a plurality of electric outputs from the heater controller; and

a bank of plugs exposed on the baffle facing the kiln, and interconnecting the electric outputs to the heater via electrically conductive wires.

12. The kiln assembly of claim 11, wherein the plugs are fixed in a strip.

13. The kiln assembly of claim 12, wherein the strip is attached to the baffle.

8

14. The kiln assembly of claim 11, wherein each plug is labelled with a unique identifier, and each corresponding socket is labelled with a corresponding identifier to allow easy identification for mating each plug with each corresponding socket.

15. The kiln assembly of claim 10, further comprising louvers on the control box to allow the flow of air through the chimney to cool the heater controller.

16. The kiln assembly of claim 15, wherein:

the control box further includes a bottom and a top;

the louvers are located on the bottom and the top;

the louvers on the bottom are directed away from the exterior to better draw cool air into the chimney; and

the louvers on the top are directed towards the exterior.

17. The kiln assembly of claim 1, which further comprises:

an insulated baffle extending the length and width of the control box within the control box and spaced towards to the back of the control box from the front of the control box; and

control components disposed within the control box and being located intermediate the baffle and the front of the control box.

18. The kiln assembly of claim 17, which further includes electric power supply conductors for supplying current for heating the kiln and a bank of plugs disposed on the baffle facing the kiln connecting the conductors and control components.

19. The kiln assembly of claim 1, wherein the body is separable into at least two sections.

20. The kiln assembly of claim 1, wherein the hinge comprises a cylindrical member and a receptacle having a circular aperture into which the cylindrical member may be inserted for rotation.

\* \* \* \* \*

WB 002540

Highly Confidential  
Attorneys' Eyes Only

# EXHIBIT C

## PART 8

**WB 002541**

**Highly Confidential  
Attorneys' Eyes Only**



US005539185A

**United States Patent** [19]

Polster

[11] Patent Number: 5,539,185

[45] Date of Patent: Jul. 23, 1996

[54] **COOKER/RETHEMALIZER**

[75] Inventor: Louis S. Polster, Alexandria, Va.

[73] Assignee: Oliver Products Company, Grand Rapids, Mich.

[21] Appl. No.: 379,364

[22] Filed: Jan. 27, 1995

**Related U.S. Application Data**

[62] Division of Ser. No. 65,607, May 21, 1993.

[51] Int. Cl.<sup>6</sup> F24H 1/06

[52] U.S. Cl. 219/439; 219/438; 392/449; 392/459; 99/330

[58] Field of Search 219/436, 438, 219/439; 392/441, 444, 458, 459, 449, 451; 73/202.5, 204.16, 204.11; 99/330

[56] **References Cited****U.S. PATENT DOCUMENTS**

1,979,222	10/1954	Goodwin	219/444
2,024,386	12/1935	Phelps	219/35
2,241,397	5/1941	Week	251/77
2,683,795	7/1954	Shedder	219/35
2,805,314	9/1957	Michaelis	219/43
3,076,976	2/1963	Bogar	47/80
3,325,290	8/1970	Greenens	99/536
3,626,840	12/1971	Day	99/555
3,788,302	11/1974	Maloney	126/374
3,869,972	3/1975	Chase	99/410
5,904,822	9/1975	Rivelli	219/442
5,019,523	11/1975	Wadia	219/494
3,958,503	5/1976	Moore	99/327
5,579,056	9/1976	Barnes	23/592
4,063,068	12/1977	Johnson et al.	219/441
4,181,614	1/1980	Steenhorst	210/221
4,320,286	3/1982	Borrap	219/549
4,384,401	5/1983	Borrap	226/11
4,441,016	4/1984	Oota	219/441
4,450,757	5/1984	Albo	99/327
4,468,557	8/1984	Hylin	219/35
4,480,173	10/1984	Butterfield	219/312
4,489,295	12/1984	Plutous	219/437

4,491,146	1/1985	Sveds	137/341
4,574,183	3/1986	Knauss	219/438
4,717,812	1/1988	Makilo	219/528
4,724,825	2/1988	Fritsch	126/357
4,741,261	5/1988	DIMaria	99/330
4,741,623	5/1988	Hrauser	366/160
4,794,228	12/1988	Braun, Jr.	219/415

(List continued on next page.)

Primary Examiner—Teresa J. Welberg

Assistant Examiner—J. Pelham

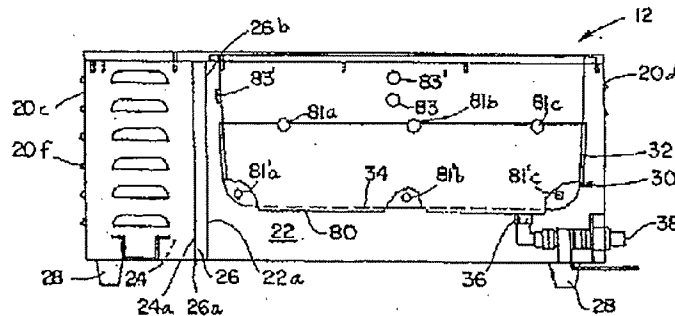
Attorney, Agent, or Firm—Price, Heneveld, Cooper, DeWitt &amp; Litton

[57] **ABSTRACT**

A food cooker/rethermalizer especially suited for cooking or for reheating of prepared, packaged meat and sauce entree items, and optionally for cooking vegetables. The apparatus includes a multiple of food item receiving locations defined by a locator rack, and fluid ejecting tubes beneath the locations to eject fluid such as air therefrom, which rises over the package surfaces for bath mixing and efficient and uniform heat transfer. The tubes include a pair of upwardly sloped conduits oriented in opposite directions and which eject fluid at the upper ends of the tubes, on opposite sides of the bath, to cause circulation of the heated liquid bath. The bath is heated by resistance coils embedded in rubber bonded to the outside of the vessel. The bath level is controlled by a dual temperature sensor device, one sensor above the other, to detect a predetermined temperature differential and activate a water supply valve to inject only small quantities of water. The heating chamber is separated from the electronics control chamber by a space which has a thermally generated convection cooling action. The defined locations of the locator rack have a geometric arrangement matching the geometric arrangement of controls on a control panel.

If the unit is used to cook pasta, the rising fluid not only assists with bath mixing and cooking action, but also keeps the pasta from sticking together, while the sloped ejection tubes of the basket function to eject starch floating on the bath out of the vessel.

5 Claims, 6 Drawing Sheets



WB 002542

Highly Confidential  
Attorneys' Eyes Only

5,539,185

Page 2

## U.S. PATENT DOCUMENTS

4,803,920	2/1989	Korwalle	366/101	5,097,759	3/1992	Vilgahn	99/530
4,853,518	8/1989	Bravo	219/441	5,103,801	4/1992	Herring	126/374
5,069,150	4/1991	Anderson	99/360	5,265,523	11/1993	Mine	99/450
5,067,170	11/1991	Nagashita et al.	392/461	5,271,085	12/1993	Cerballo	392/444
				5,284,085	2/1994	Palm	99/348
				5,333,876	5/1994	Hilger et al.	99/330

WB 002543

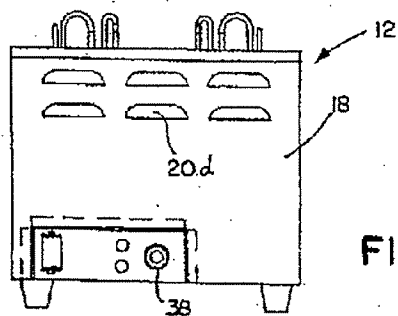
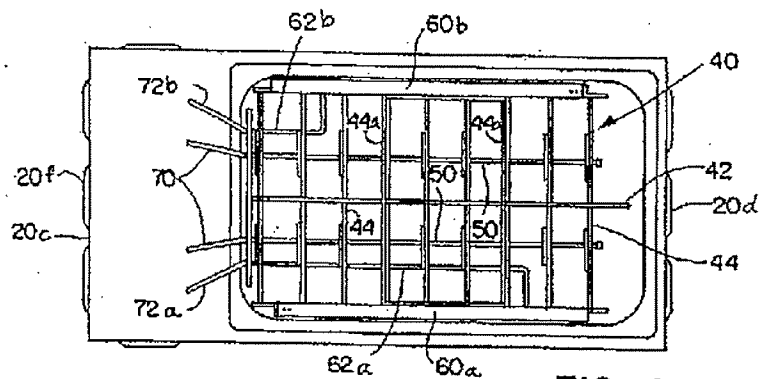
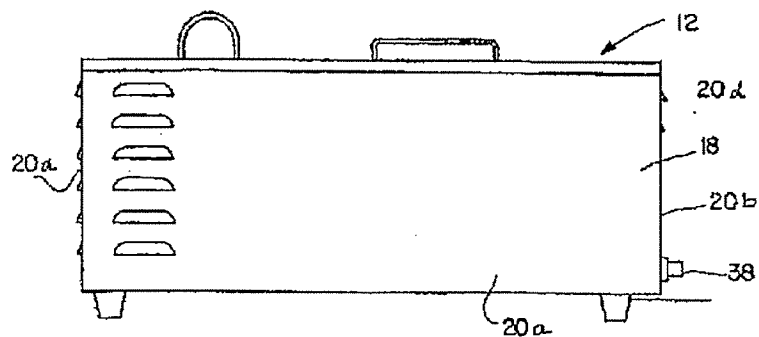
Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jul. 23, 1996

Sheet 1 of 6

5,539,185



WB 002544

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jul. 23, 1996

Sheet 2 of 6

5,539,185

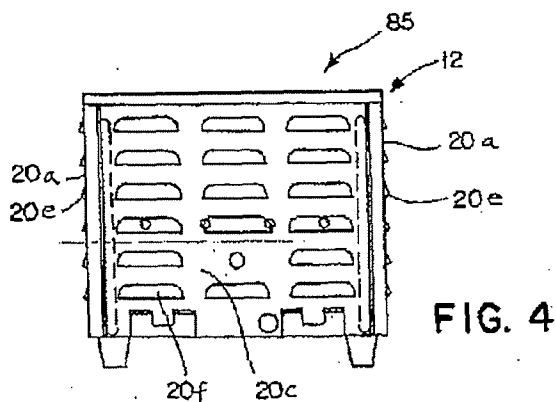


FIG. 4

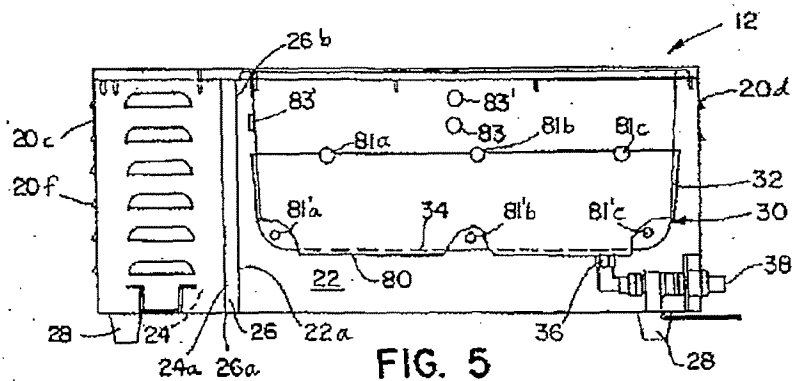


FIG. 5

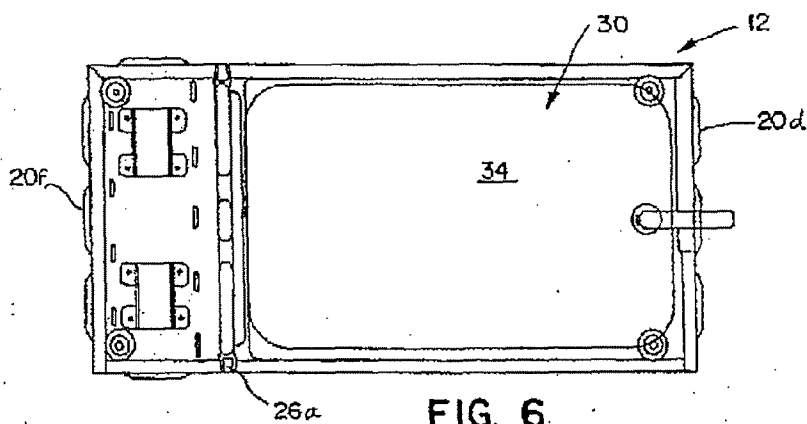


FIG. 6

WB 002545

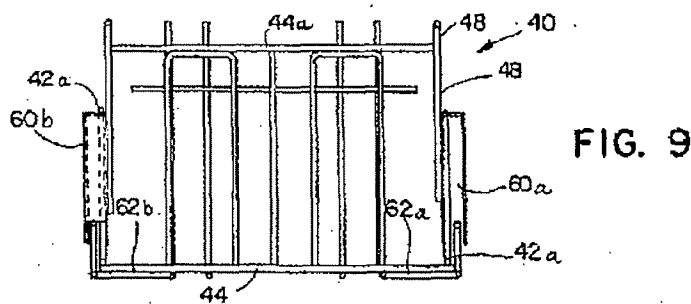
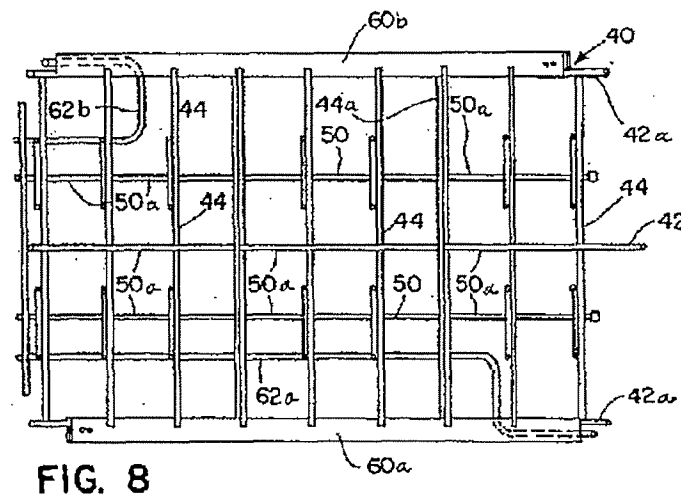
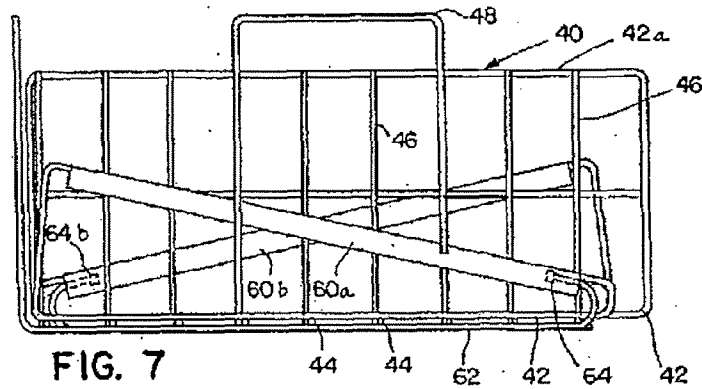
Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jul. 23, 1996

Sheet 3 of 6

5,539,185



WB 002546

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jul. 23, 1996

Sheet 4 of 6

5,539,185

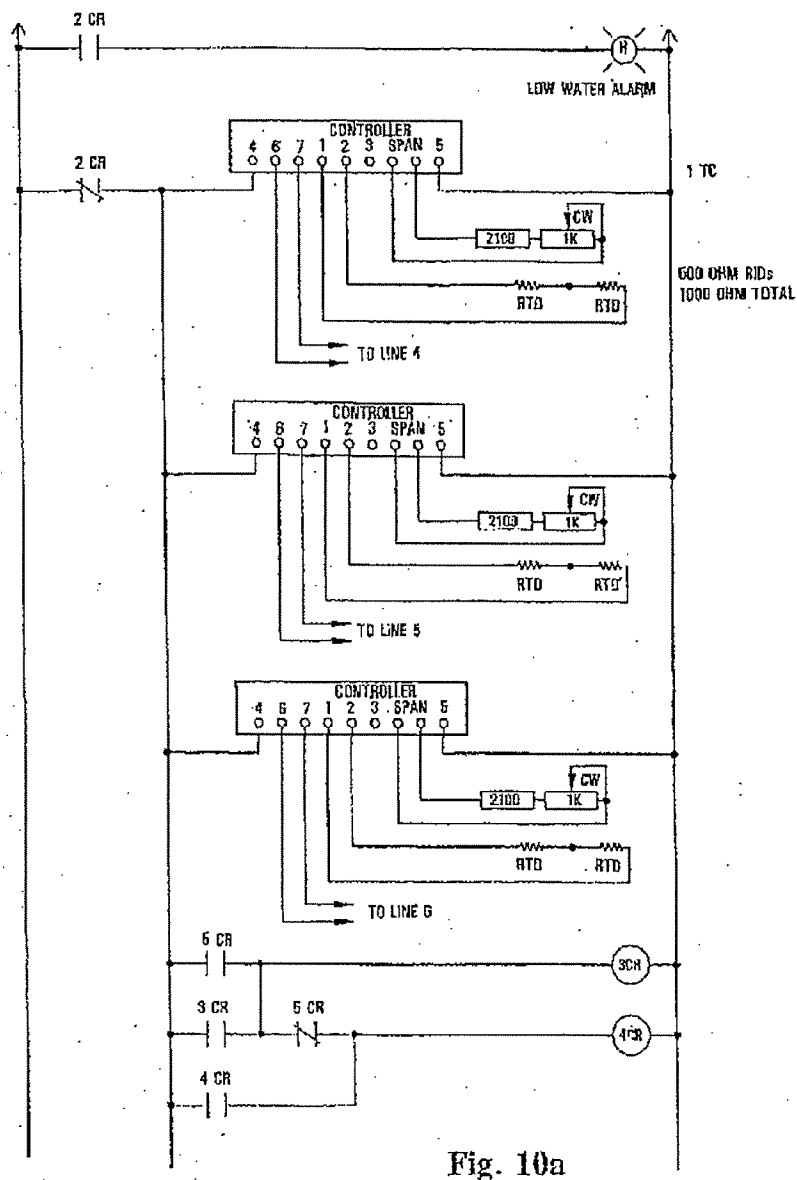


Fig. 10a

WB 002547

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jul. 23, 1996

Sheet 5 of 6

5,539,185

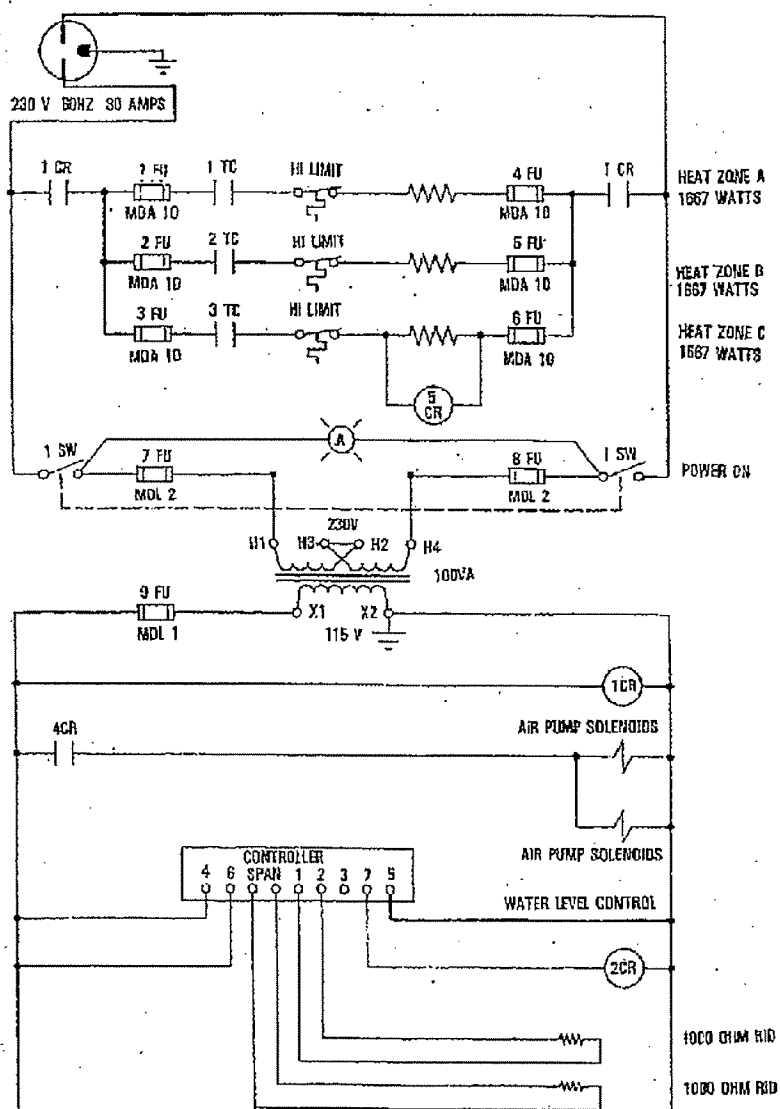


Fig. 10b

WB 002548

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Jul. 23, 1996

Sheet 6 of 6

5,539,185

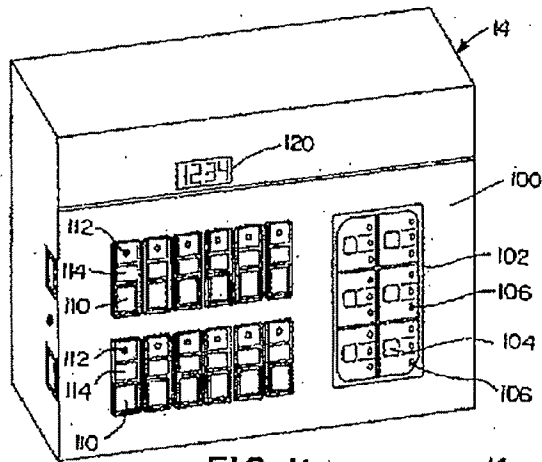


FIG. 11

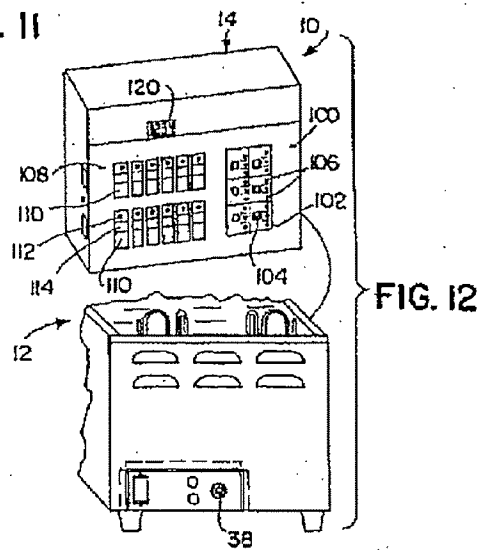


FIG. 12

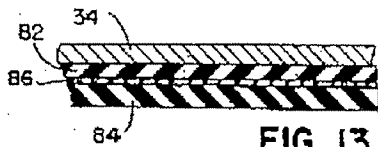


FIG. 13

WB 002549

Highly Confidential  
Attorneys' Eyes Only

5,539,185

# 1

## COOKER/REHEATER

This application is a division of copending application Ser. No. 08/065,627 filed on May 21, 1993.

### BACKGROUND OF THE INVENTION

This invention relates to a heating apparatus, particularly a food cooker and/or rethermalizing apparatus.

Food Service food preparation in recent years has involved convenience foods or convenience packaged foods for easier preparation or cooking. Typically, this involves one of two known techniques using flexible film packages, namely: 1) so-called "cook-chill," and 2) so called "sous vide". These two are known to be excellent systems for supplying high quality, nutritious, previously prepared food, ready for reheating to provide meals. The technique known as cook-chill involves soups, sauces, and other products of pumpable consistency. The product is cooked at a facility separate from restaurants or the like, where it is pumped into strong plastic casings, closed by clipping or heat sealing, then chilled and kept under refrigeration, optionally frozen. Non-traditional cook-chill products such as pasta, rice, and vegetables are also becoming popular.

In contrast to this cook-chill technique described above, the sous vide technique involves packing of raw or partially cooked products into plastic pouches under vacuum, then cooking, and finally chilling either to frozen or nonfrozen condition.

Sous Vide technique is typically used for a variety of meat or fish pieces. These refrigerated, vacuum packaged foods are then reheated in selected groupings at the restaurant or other location, in response to customer orders. Experience has demonstrated that such carefully prepared food items can be of excellent quality, satisfactory to even the most discerning palates.

When properly treated, these previously prepared foods enable serving of high quality food without having the expense and complications of a talented chef on staff at restaurants and/or institutions, or without requiring extended cooking time if done at home. Preparation can be rapid, relatively inexpensive, and far less complex than in a typical operation.

The excellent quality of this food preparation technique is too often lost in the reheating process. The difficulty has been found to occur largely as a result of inaccurate temperature control and/or variable heat transfer rates during the reheating process. In fact, proper heating has been found to be critical to high quality results. Heating in boiling water tends to destroy food quality. Placing the packages in hot water below the boiling temperature for a selected time may or may not result in satisfactory food. The resulting temperature of the food product may be too high or too low. What can occur is that a meat serving, for example, is overheated and tough while another portion is not fully heated. Efforts have been made to circulate the reheating water medium by using circulation pumps as in Vilgrain et al U.S. Pat. No. 5,097,759; but this is not considered an adequate solution for consistent food quality. The bath water does not flow evenly over all surfaces, but rather takes the path of least resistance. Further, the bath water tends to stratify into thermal layers of different temperatures. It has been determined that the bath tends to heat unevenly. Even if the heat is spread over the surface of the vessel, it will separate into laterally adjacent zones, each having a width of about six inches or so. These all tend to prevent controlled

2

temperature cooking or reheating in a hot water bath. Controlled proper heating or rethermalizing of the servings is further complicated by the fact that several different packages of different food are typically put into the bath during a particular time period, and these are inserted at different times in response to successive customer orders received. Hence, even though complexities due to meals not being totally prepared by the restaurant kitchen are bypassed, still the cooking or rethermalization of many individual meals and various components of those meals can become chaotic and difficult to properly perform.

Portions of food products in flexible film packs have only, until now, been cooked successfully in Sous Vide or Cook Chill preparation facilities wherein the equipment is large, special purposed, and monitored by computers including special temperature probes inserted into food portions in the processing chamber.

In general, standard restaurant or home reheating/cooking equipment is unsuited to cooking and heat at reheating food products in flexible film packages. The standard equipment is characterized by poor control of operating temperatures. Cooking is accomplished using a cooking fluid of water, air or oil. Temperature differences in an oven typically amount to 20° F. and can significantly affect quality unless a chef is there to interrupt or modify the cooking process appropriately. Even so, air transfers heat so much slower than water and has very little stored energy, so the oven is somewhat forgiving when cooking unpackaged food, but is unsuited to cooking or reheating flexible film packaged food.

Fryers use oil or shortening as the temperature transfer media and have very sophisticated control systems to hold temperatures within a few degrees. Even so, they require either a chef of great experience to monitor the cooking or the even more sophisticated frying computers as in Polster U.S. Pat. No. 4,362,094 to achieve consistent quality cooking. The operating temperatures of fryers is unsuited to cooking or reheating flexible film packaged food.

Pots or pans of hot or boiling water are good for cooking eggs and vegetables. They are unsuited for cooking or reheating flexible film packaged food.

Typical Bain Marie's have a heater in the bottom of a large bath of water. Often a temperature control is used to control the temperature of the bath. If a load of food product is introduced into one portion of the bath, the remaining portion of the bath will either go to a much higher temperature (often boiling) or the area where the food has been introduced will drop in temperature depending on where the temperature control sensor is located. In either case all or some of the food will be heated at the wrong temperature and in one case the remaining area of the bath will be at the wrong temperature for the introduction of more food products.

In restaurant kitchens, another known severe problem that significantly affects cooking is water level control for heating bath vessels. Water level is typically established manually by adding cold or hot water to the heated vessel to replace water lost by evaporation and by water transfer with the packaged food items removed. Adding this water to a heated vessel, usually in a significant quantity by the time the bath decline is noticed, typically causes a significant temperature change. Usually a decline, in the bath. Even if heated water is added, its temperature will most likely be many degrees different from the bath temperature. This alters the cooking/reheating process and thus alters the time required to cook or reheat the food items in the bath.

When cooking pasta in boiling water, the action of the boiling keeps the pasta from sticking together. Most modern

WB 002550

Highly Confidential  
Attorneys' Eyes Only

5,539,185

3

pasta cooking systems have a perforated basket that drops into the boiling water and contains the pasta to be cooked. The boiling action does not occur within the perforated basket and the operator is obligated to stir the pasta while cooking to keep it from sticking together. Therefore modern pasta cooking systems actually cook pasta in hot water which does not have enough circulating action to properly cook it.

Another more subtle obstacle to proper cooking/reheating in a water bath has been discovered to be the standard proportioning temperature control technique which compensates for lag time and the thermodynamics of the water bath itself. The problem is that such techniques are not responsive to highly variable loads. Therefore in order to avoid the disastrous overshoot of temperature of an on-off control system, the recovery time of a proportioning temperature controlled water bath varies dramatically with load which changes the time to cook significantly. This problem is unobvious as the water bath seems to perform by properly coming to temperature without overshoot and the variations in cooking are mysterious.

When dealing with hot water baths, even 5° F significantly changes the texture of many foods to be cooked. Temperatures should be held within about 2° F of the optimum temperature. Circulation of the fluid helps to prevent temperature layer stratification, but circulation alone without exact bath temperature control is not enough. Further, the presence of circulation does not necessarily assure even flow over all surfaces of the food items. This flow over all surfaces of the food items is important for proper cooking or reheating. The mere presence of the food items disturbs the circulation pattern of any cooking vessel, with the fluid taking the path of least resistance and not the paths between all the food items, especially if the paths are narrow. Fluid dynamics in the cooking vessel present problems.

It has been found by the inventor herein to be important, for proper cooking or rethermalization, that the temperature be retained in a closely controlled range, for there to be totally efficient heat exchange with the surfaces of each of the several packages or items of food being cooked or reheated, for each item to be heated in accordance with the type of food in the package, i.e., for each type of entree, sauce, pasta, and vegetable etc., to be heated for an exact predetermined amount of time and at a temperature which is optimum for that entree or sauce. Achieving these results with present cooking or rethermalization equipment does not dependably occur. As noted, if too high a temperature is used, the food becomes overcooked and the texture is adversely affected. If too low a temperature is used, the food is not properly cooked. If the temperature changes, the food chemistry changes.

It has also been found that vegetables can be cooked in the water bath, using the above mentioned principles, loose or in a perforated flexible film package, or reheated after initial cooking and vacuum packaging.

Another discovery was that the bubbles used to vertically permeate the water bath between food packages kept pasta from sticking together even though the bath was not boiling. The bubbles also facilitated the removal of the starch that is cooked out of the raw pasta. The starch and a small amount of water was then found to be removed from the bath by the bubble driven circulation system. The water level control system made up the water lost removing the starch.

#### SUMMARY OF THE INVENTION

The inventor herein has developed a unique apparatus for cooking or rethermalizing food. It achieves fluid flow action

4

over the surfaces of all of the food packages in a cooking or rethermalizer vessel, for excellent heat exchange with the packages. The invention provides a unique cooking/rethermalizing apparatus and system which effects uniform cooking, or uniform reheating of individual portions of previously prepared and packaged food. The apparatus effects uniform heating of food items, even when placed anywhere in the heating bath at different times. At the time the food item is placed in the bath, retained by food locating and support means, the particular type of food item and its location in the bath are entered in a controller which has a control panel that visually corresponds to the geometry of the defined locations of the locator rack in the thermalizing bath. Each food serving is uniformly and properly heated. Each package is retained in position, separated from other packages, in a locator rack retainer which employs a unique fluid generator system, preferably for generating bubbles, to simultaneously, 1) hold the packages in proper orientation in locations, 2) separate the packages from other packages in these locations, 3) cause flow over all of the package surfaces in all of the locations for uniform efficient heat exchange, and 4) cause bath liquid circulation within the vessel throughout the several defined locations. The retainer is an open top, open mesh locator rack which defines these locations for the packaged individual food items, and has tubes to generate flowing fluid, preferably air bubbles, between all the locations for causing fluid scrubbing over all of the package surfaces as the bubbles rise to the surface. This flow action causes excellent heat exchange at the package surfaces, as well as elimination of temperature stratification for accurate and efficient heat transfer to the food. The tubes preferably include diagonally, upwardly, outwardly oriented, i.e. sloped, tubes or ramps extending in opposite directions on opposite sides of the vessel, for discharge of a fluid, preferably a gas such as air, in opposite directions, causing the bath to circulate continuously.

Another object of this invention is to provide a cooking/rethermalizing vessel bath level control using specially arranged and cooperative temperature sensors. Controlled automatic injection of small quantities of replacement water occurs frequently, as necessary. The only openings needed in the vessel itself are the open top and a bottom drain. The invention herein uses a unique, vertically displaced, temperature sensing and responsive water level control system. It senses temperature differential between different vertical locations of the vessel, to cause added water to be included in small regular quantities as needed. The sensors are vertically spaced on the outside of the vessel, to detect the temperature differential between a portion of the vessel constantly containing the heated bath and a portion which may or may not contain the heated bath, to control replacement water input in response to this temperature differential sensing.

The vessel is heated in laterally adjacent zones for control. Further, a temperature sensor is located on the vessel for each zone, near the heater to cooperate with sensors near the vessel bottom, to compensate for lag time, i.e., thermal momentum, and thereby prevent serious overshoot of the rising temperature above the optimum temperature desired. This arrangement minimizes recovery time.

Another object of this invention is to provide cooking/rethermalizing bath apparatus enabling direct easy control and monitoring of individual servings of food placed in the bath, even though the items are of different foods, even though they are placed in the bath at different times, and in different parts of the bath. The food retaining means in the bath has its plurality of locations arranged in a geometric

WB 002551

Highly Confidential  
Attorneys' Eyes Only

5,539,185

5

pattern which visibly and pictorially corresponds to a similar control panel geometric pattern, with a timer control and indicators for the respective locations.

The housing of the rethermalizer has its control system mounted in an electronic control chamber separated from the cooking chamber by a pair of spaced vertical walls, the space between the walls being vertically elongated and having openings at the bottom and at the top thereof to cause thermally generated air flow entering at the bottom and departing at the top, thereby effecting a cooling action/thermal isolation over the wall of the electronic control chamber. This creates a chimney type flow, convection cooling action that isolates the control chamber from the cooking vessel.

Another object of the invention is to provide a cooker/rethermalizer which can serve as a special cooker for pasta. The present invention enables pasta to be cooked in a container inside the main bath vessel, with fluid flow action up through the pasta inside the container for uniformly cooking, preventing the pasta from sticking together and for elevating starch to the surface.

Furthermore, the novel apparatus automatically removes the cooked starch floating on the surface of the bath, achieving this discharge by the same fluid flow tube structure which circulates the bath. The floating starch is upwardly, outwardly ejected from the vessel by fluid ejected from the ends of diagonally, upwardly, outwardly oriented tubes. As noted, these tubes include a pair on opposite sides of the cooking vessel, to also cause circulation of the liquid bath. Another object of this invention is to provide a cooking/rethermalizing system that allows separate temperature control of laterally adjacent bath zones in the vessel, to match the zone heat input to the load of that zone, end in a fashion minimizing temperature overshoot in another zone.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the cooker/rethermalizer of this invention;

FIG. 2 is a top plan view of the apparatus in FIG. 1;

FIG. 3 is a front end view of the apparatus;

FIG. 4 is a rear end view of the apparatus;

FIG. 5 is a side elevational view, partially in cross section, showing the heater vessel, the bottom drain therefrom, and the double wall between the heater chamber and the control electronics chamber, with the retainer rack for supporting food packages removed therefrom;

FIG. 6 is a top plan view of the apparatus with the retainer rack for supporting food packages removed therefrom;

FIG. 7 is a side elevational view of the food item supporting retainer rack, including fluid tubes;

FIG. 8 is a top plan view of the basket in FIG. 7;

FIG. 9 is an end elevational view of the retainer rack in FIGS. 7 and 8;

FIGS. 10A and 10B are a circuit diagram of the control system;

FIG. 11 is a perspective view of the control module with its control panel;

FIG. 12 is a front elevational view of the cooker/rethermalizer and its control system; and

FIG. 13 is an enlarged, fragmentary, cross sectional view of a portion of the bottom of the heating vessel.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now specifically to the drawings, the complete combination 10 (FIG. 12) of the cooker/rethermalizer

6

assembly 12 and the control module assembly 14 are there illustrated.

The assembly 12 includes a housing 18 made up of a plurality of four walls, i.e., two side walls 20a, a front end wall 20b, and a rear end wall 20c. Housing 18 rests upon a plurality of feet 28, and is divided into two chambers, namely a heating chamber 22 (FIG. 5) and an electronic control chamber 24. These chambers are separated from each other by a vertically elongated, transverse space 26 having the rear heating chamber wall 22a on one side and the front electronic control chamber wall 24a on the other side. Electronic control chamber 24 includes three outside walls and inside wall 24a. Space 26 extends transversely across the entire unit, having one or more openings 26a at the bottom thereof for entry of cooling air and one or more top openings 26b, preferably into heating chamber 22, for flow of air out of space 26. Thermal energy from chamber 22 creates a chimney-type convection flow effect relative to space 26, the thermally generated air movement thus constantly moving up through space 26. This cools wall 24a and thus thermally isolates control chamber 24 from heating chamber 22, to maintain the electronic control components relatively cool, i.e., at a significantly lower temperature compared to that of heater chamber 22. In the front wall 20b is a pair of outlet vents 28d to allow heated air from chamber 22 to escape. The side walls of the control chamber 24 include a plurality of vents 20e, and rear wall 26c includes a further plurality of vents 30f, enabling the electronic control chamber 24 to be flushed constantly with cool ambient air.

Within heater chamber 22 is a heater vessel 30, preferably of stainless steel, and having four side walls 32, i.e., a front wall, a rear wall and two lateral walls, all integrally joined, as well as a bottom wall 34 integrally joined with the four side walls to form an open top vessel. Other than the open top, the only opening into the vessel is a drain outlet conduit 36 in vessel bottom 34. This drain may be controlled by a valve actuator 38 which protrudes from the front of the rethermalizer housing.

Within vessel 30 is placed a special food item retaining locator rack 40 depicted in FIGS. 2, 7, 8 and 9. This locator rack comprises an open mesh type of structure formed of elongated elements, largely wire-type or tubular-type elements, preferably of stainless steel metal, forming a bottom and four upstanding walls. Several portions of these elements are specially adapted to conduct fluid, preferably gas and normally air, but potentially fluid such as water, there-through, in a manner explained hereinafter for purposes explained hereinafter. It is not necessary that all components of the locator rack be hollow or that they all be capable of conducting fluid, but it is significant that they be constructed so that fluid discharge will emanate therefrom into the heated fluid bath in a manner causing bath mixing action and flow along the surfaces of all of the packages of food placed in special defined locations defined by the locator rack. In the preferred embodiment depicted, there is an elongated wire element 42 (FIG. 7) which extends the length of the rectangular shaped locator rack depicted, this being shown to run through the center of the rack dividing it into two visual major locations. Two roughly triangular elongated wire elements 42a define the sides of the locator rack and provide a place for the U-shaped ramps to be attached. These three elongated wire elements are shown interconnected by a plurality of bottom transverse wire elements 44 which are normal to elements 42, and here shown to be nine in number, to underlie 18 locations in this embodiment. Two top wires 44a further (visually) divide the locator rack into

WB 002552

Highly Confidential  
Attorneys' Eyes Only

5,539,185

7

a total of six primary locations each with three locations totaling the 18 locations, formed by the locator rack. These locations have vertical walls formed by upstanding inverted U-shaped wires 46 attached to the bottom transverse wire elements 44. The wire elements 44a and 42 thereby divide the basket visually into the primary locations. Two inverted, U-shaped side handles 48 for lifting the locator rack out of the heater vessel are attached to wires 42a and 44a.

The locator rack also includes special fluid conducting and releasing tubes. More specifically, one longitudinal pair of tubes 50 extends beneath the 18 locations, each tube extending beneath nine locations on its respective side of the rethermalizer vessel.

Each of these tubes or tubular elements 50 has a plurality of outlet orifices 50a (FIG. 8), preferably on the underside thereof, along the length thereof, to allow a pressurized fluid such as gas, typically air, to be ejected from the tubes along the length thereof, beneath all of these locations. Air bubbles thus will form, rising gravitationally to the surface of the aqueous bath contained in vessel 30, moving up over the surfaces of packages of food positioned in the locations defined by the locator rack, thereby mixing and disturbing the bath water over the surfaces of the packages to promote uniform temperature and efficient heat exchange with the food products being heated. On opposite sides of the locator rack are diagonally arranged, upwardly outwardly sloped, inverted U-shaped ramps which are inverted-trough or tunnel-type conduits 60 (FIG. 7). Each of these has an air inlet at one end, namely the lower end thereof, and an outlet at the opposite upper end. These inverted trough-type conduits extend upwardly in the opposite direction relative to each other. Conduit 60a is shown to have an elongated air tube 62a extending along the underside of the locator rack, almost the full length thereof, and then bending up in a U-turn in a gas outlet 64a (FIG. 7) into the inverted trough or U-shaped member 60a. Any pressurized fluid, e.g., air, passing through tube 62a to outlet 64a will then form bubbles which flow up the sloped inverted trough 60a pushing the bath fluid ahead and both being ejected at the upper end of trough-type conduit 60a in a diagonal direction toward the rear end wall of the rethermalizer. On the opposite side of the vessel, a short hollow tube 62b extends to an outlet 64b beneath the lower end of inverted trough-type tube 60b for ejecting air or other fluid up into and through this trough. The fluid then forms bubbles which flow up the sloped inverted trough 60b pushing the bath fluid ahead and both being ejected at the upper end thereof which faces in the opposite direction, i.e., toward the front wall of the rethermalizer. The flow of the bubbles and bath fluid through the outlets of the tube-type members or ramps 60a and 60b causes circulation of the aqueous bath within the vessel. That is, the two operating together assure constant recirculation of the aqueous bath around the vessel and through the locations to optimize temperature uniformity by sweeping heated water away from the side and bottom of the vessel and to help reduce the tendency of the water to stratify into thermal planes of different temperature. These hollow fluid tubes 50 and 62a and 62b are each connected to a source of pressurized fluid such as air (not shown) by releasable connectors of conventional type, more specifically, e.g., tubes 50 having quick connect couplings 70 (FIG. 2) and tubes 62a and 62b having quick connect couplings 72a and 72b, respectively.

Bonded to the bottom and the lower side walls of vessel 30 (FIG. 5) is a heater 80, (FIG. 13). This heater is preferably formed of a pair of layers of rubber-like material, preferably silicone rubber polymer, one layer 82 being bonded to the

8

outside surfaces of the bottom 34 and side walls 32 of vessel 30 (FIG. 13). Embedded between layer 82 and a second polymer layer 84 of rubber-like material such as silicone rubber polymer are electrical resistance coils 86. The embedded coil and rubber layers are therefore formed into an integral part of the heater vessel forming part of the example circuitry in FIGS. 10A and 10B. This circuitry is one possible variation of the control system. Alternate solid state systems could be used as will be apparent to those in the art. As noted in FIG. 10B, these resistance heaters are shown in three zones, heat zone A, heat zone B and heat zone C, sequentially along the length of the vessel (FIG. 5), each heat zone supplying heat for two side-by-side compartments, i.e., six locations, and each heater shown here to be of about 1667 watts. The reason for having the heaters in zones is that uneven loading without zones, if sensed, would heat the entire bath in response to the sensed load causing the rest of the bath to overheat. If the load was unsteady without zones, the loaded section would lower in temperature. Circulation does not instantaneously mix and even out water or other fluid temperatures. Each zone, therefore, is separately heated in response to the temperature sensing devices for that zone, mounted to the outside surface of the vessel. More specifically, each heating element is responsive to the average of the temperature noted by a lower thermal sensor 81' and the corresponding one of the upper thermal sensors 81 (FIG. 5) mounted to the vessel 30 at longitudinally spaced locations adjacent the three zones respectively, and at a position within the heater rubber and at a specific distance from the nearest heater coil. The heater layer purposely does not cover the lower corners of the vessel, with two of the lower temperature sensors 81' being mounted to the vessel wall at the corners (FIG. 5). As noted, the average reading on upper sensor 81 and lower sensor 81' is used to control the heater for each zone. The location of the upper sensors 81 adjacent the heater enables these sensors to quickly detect rising temperature so as to compensate for lag time and therefore eliminate temperature overshoot, i.e., potential overrun of the temperature in a zone. The use of the average between the lower and upper sensors minimizes the effect of any tendency of the bath in that zone to stratify in different temperature layers and it makes the control extremely sensitive to load introduction for quick response time.

In addition to the three pairs of temperature sensors 81 and 81' (FIG. 5, and see also FIG. 10A) for the heater units, there is also provided a novel bath level control, in the form of water level control, temperature sensors 83 and 83' (FIG. 5 and FIG. 10B), comprising a fourth temperature sensor device in the circuit. Specifically, this fourth sensor device comprises at least one pair of temperature sensors 83 and 83' mounted to outer wall surfaces 32 of heater vessel 30, vertically spaced from each other, the lower one 83 establishing a set point temperature of the vessel wall always in engagement with bath water, and the upper one 83' being located at the height desired for the aqueous bath level above the heater jacket and above sensors 81. The temperature differential between the two sensors 83 and 83' is operably connected with a water supply and control valve 85 (shown diagrammatically in FIG. 4). If the heated water level drops below the level of the upper sensor, then upper sensor will detect a significantly cooler vessel wall temperature than the lower sensor which is still adjacent the heated bath water. At a predetermined temperature differential between them, the sensors activate the water inlet valve 85, allowing a small amount of added water, preferably water heated to the same temperature as the bath, to be incorporated into the bath.

WB 002553

Highly Confidential  
Attorneys' Eyes Only

5,539,185

9

This occurs repeatedly on a short time interval basis as the water level repeatedly declines slightly due to evaporation and due to water loss by clinging thereto to the packages removed from the bath. Thus, the overall bath temperature drop occurring with the addition of a small amount of water will never be particularly significant so as to cause excess cooling and upsetting of the cooking process and timing of heating of food packages in the vessel.

When the cooker/rethermalizer is put into operation, it will be realized that a variety of different meal entrees may be inserted in any one time in the multiple of locations in the locator rack, each requiring its own heating time optimum for that particular type of meat and style of cooking, as well as each independent packaged source being heated for a predetermined optimum time. Packages of vegetables may also be placed within certain of these locations and be heated and/or cooked at the same time. Hence, at any one time the process can become quite complex. To simplify the operation of this potentially complex arrangement, the control panel 100 of the controller 14 (FIGS. 11 and 12) is specially graphically designed. One control panel portion 102 has a geometric pattern corresponding to the geometric pattern of the locations of the locator rack in the cooker/rethermalizer vessel. More specifically, referring to FIGS. 2, 11 and 12, it will be noted that the control panel portion 102 for the specific locations is set forth in a graphic manner to have a geometric pattern corresponding to and visually simulating the geometric pattern of the locations in the heater vessel. Therefore, for the 18 locations depicted for the locator rack, there are 18 spaces on the geometric pattern 102, with three primary locations along each side in similar fashion to the rack. These six primary locations each have a "location" timer control button 104 and three "location in use" indicator lights 106 i.e., one light for each of the 18 "locations" in the bath. Also shown on a second control panel portion 108 is a plurality, here shown to be 12 in number, of "product" button switches 110 (in two rows), each having a "product" indicator light 112 and a product label space 114. These label spaces are occupied by labels such as "Beef," "Chicken," or other meat entrees, or labels such as "Bologna Sauce" or the like, for particular sauce packages, or vegetable labels such as "Carrots," "Cabbage," etc. Each product button is set for the cooking or reheating time of the labelled product.

Operation of the cooker/rethermalizer—timer/controller system starts with one simple rule—within a primary location, load the three locations front to back in sequence (this was done so that only six location buttons were needed instead of the eighteen that would be necessary if there was one button per location). The operator puts a product to be cooked or rethermalized in the "front" location of a primary location, such as in the right front corner, first a "Beef" product button switch 110 is pressed on panel 100, causing a product light 112 to illuminate, and then the location button switch 104 is pressed that graphically represents the three locations of the right front corner. The "beef" time is then transferred to the timer for the right front corner and the associated location light 106 for the right front corner illuminates. Within a primary location the nearest to the front unused location can in similar fashion be loaded with a food, its timer product button pushed and then its primary location button pushed ending with a lighted location light with an internal associated timer running.

The operator, by looking at the timer/controller can see which locations have product in them and the digital time display 120 on the control panel 102 counts down the time of the nearest to done food product. This tell nearest to done

10

time lets the operator know when he will next need to act to remove a reheated or cooked food product. When the time for cooking or reheating a food product has elapsed, an audible signal will sound and the location light 106 associated with that food product will blink. The blinking light alerts the operator as to which food product to remove from the bath and which timer location button (within the same primary location as the "done" product) to push to cancel the audible signal and blinking location light. The timer display 120 will then illustrate the "nearest to done" time remaining for the next sequential item to be removed, and so forth.

Optionally, more than one timer display may be provided. Also, there could be a separate timer control button 104 for each location.

The example circuitry in FIGS. 10A and 10B was employed on the prototype for the invention. It may alternatively be substituted by lower cost, printed circuit boards accomplishing the same basic functions, as noted previously.

In operation, the vessel is filled with water and heated to a preset temperature. The selected temperature may be anywhere between 140° F. (at which bacteria are killed) and 212° F. (boiling temperature), for example 145° F. (for holding food, precooking, medium rare beef, and to be certain to kill bacteria), 160° F. (for cooking chicken or fish), 170° F. (to cook lobster), 180° F. (to reheat or rethermalize food), 200° F. or 205° F. (to cook vegetables) or 212° F. (to cook pasta). The temperature selected is maintained in the bath within about two degrees, by the temperature control sensors and cooperative resistance heaters of this apparatus. Individual packages of previously prepared or raw food, e.g., meat entrees and sauces, are inserted sequentially in the respective locations of compartments of the locator rack, and zones of the bath, the insertion of each entry being followed by actuation of a product control switch 110 and a location button switch 104 as noted above, thereby activating the digital timer displayed at 120. When the unit is operated, fluid such as compressed air is continuously injected into tubes 50, 62a and 62b. Outlets from tubes 50 cause the fluid, preferably air bubbles, to rise through the bath and over the surfaces of each individual package in each location, to mix the water adjacent all of the packages and cause efficient heat transfer. Simultaneously, fluid such as air is ejected up inverted channel ramps 60a and 60b, and ejected diagonally from the upper end outlets thereof in opposite directions on opposite sides of the vessel, thereby causing the aqueous bath liquid to circulate around the vessel. After the predetermined heating time for each entry, the package thereof is removed from its location, the selected sauce is removed from its location, the packages are opened and the two items combined on a plate for serving. If a vegetable entree is selected, a package of cooked vegetables of selected type is removed from its location, opened, and placed on the plate.

Experimental use of the apparatus has shown that it produces excellent high quality food products prepared appropriately for the cooking conditions of the particular items, yet without an on-site chef, with far less space required than conventionally necessary, and with controlled production.

If the apparatus is used to cook pasta, a rack not having the locations but employing the lower fluid flow tubes and the diagonal ramps may be used. If the fluid injected is air, bubbles pass up through the pasta, e.g., spaghetti, for both mixing, evenly cooking the pasta, and separation of the pasta material. The starch that is cooked off the pasta rises to the surface, assisted by the bubbling action, at which point the air or water ejected from the diagonal tube upper end outlets

WB 002554

Highly Confidential  
Attorneys' Eyes Only

5,539,185

11

64a and 64b (FIG. 7) ejects the starch from the bath, i.e., over the edge of the vessel into an appropriate surrounding container (not shown) for easy removal.

It is conceivable that certain details of the development described above could be modified from the preferred embodiment set forth and described as exemplary of the invention. Such variations to suit a particular type of installation or operation are considered to be part of the invention which is intended to be limited only by the scope of the appended claims and the reasonable equivalents thereto.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

I claim:

1. A food preparation cooker/rethermalizer comprising a vessel to contain a water bath;
  - water supply means for supplying additional water to said vessel to replace water lost by evaporation and removal with food items;
  - temperature sensing elements at spaced, different vertical locations of said vessel, an upper one at the level desired for the bath, and a lower one below that level for detecting the differential sensed by said temperature sensing elements;
  - a heater attached to said vessel, and said upper sensing element being above said heater;
  - said temperature sensing elements being operably associated with said water supply means for periodically actuating said water supply means to add supplemental water to said vessel when a predetermined temperature differential is detected.

12

2. The food preparation cooker/rethermalizer in claim 1 wherein said heater has a rubber jacket bonded to said vessel walls, said upper sensing element is above said jacket, said jacket has an opening in at least one location, and said lower sensing element is at said opening.

3. A food preparation cooker/rethermalizer comprising:
  - a heating vessel having sides and bottom walls for retaining an aqueous bath;
  - heater means for heating said vessel;
  - water supply means for adding supplemental water to a bath in said vessel;
  - a pair of temperature sensors arranged in vertically spaced relations up on said vessel, one of said sensors being up on said side walls at a preselected desirable bath level in said vessel; and

means for detecting the temperature differential of the temperatures sensed by said sensors, and operably associated with said water supply means for actuating said water supply means upon sensing a predetermined temperature differential, to add supplemental water to said vessel.

4. The food preparation cooker/rethermalizer in claim 3 wherein said walls and bottom have interior surfaces and exterior surfaces, said sensors being against said exterior surfaces.

5. The food preparation cooker/rethermalizer in claim 3 wherein said heater has a rubber jacket bonded to said vessel walls, said one sensor is above said jacket, and said other sensor is adjacent the bottom of said vessel.

\* \* \* \* \*

WB 002555

Highly Confidential  
Attorneys' Eyes Only

WB 002556

Highly Confidential  
Attorneys' Eyes Only



US006362459B1

(12) **United States Patent**  
Schmidt

(10) Patent No.: **US 6,362,459 B1**  
(45) Date of Patent: **Mar. 26, 2002**

(54) **ELECTRONICALLY CONTROLLED  
ROASTER OVEN WITH DIGITAL CONTROL  
ASSEMBLY**

(75) Inventor: **Bruce E. Schmidt, Manibel, WI (US)**

(73) Assignee: **The Metal Ware Company, Two  
Rivers, WI (US)**

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/760,116

(22) Filed: Jan. 12, 2001

(51) Int. Cl.<sup>7</sup> A21B 3/00; A47J 36/00;  
A47J 37/00

(52) U.S. Cl. 219/414; 219/400; 219/435;  
219/399; 99/325

(58) Field of Search 219/414, 390,  
219/391, 399, 400, 412, 435, 441; 361/678,  
690, 692; 99/403, 325, 447

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

3,393,295 A \* 7/1968 Jepson et al. 219/398  
3,527,154 A \* 9/1970 Shaper et al. 99/400

3,757,671 A \* 9/1973 Warshawer et al. 219/400  
5,477,029 A \* 12/1995 Skell et al. 219/390  
5,539,185 A \* 7/1996 Pokier 219/439  
5,734,149 A \* 3/1998 Skell et al. 219/390  
6,229,507 B1 \* 5/2001 Nakamura et al. 361/690

\* cited by examiner

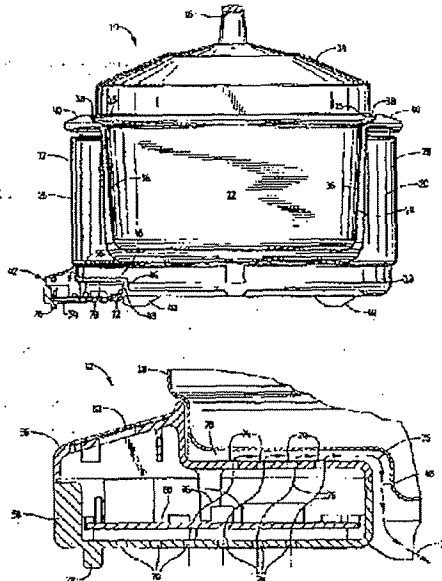
Primary Examiner—Joseph Pelham

(74) Attorney, Agent, or Firm—William K. Baxter, Godfrey  
& Kalau, S.C.

(57) **ABSTRACT**

An electronically controlled cooking apparatus for preparing and cooking food, such as a roaster oven, includes a main body having a bottom portion or base with sidewalls extending upwardly therefrom, a cover for covering the main body of the cooking apparatus, and a control assembly for controlling operation of the cooking apparatus that is mounted to the bottom of the base in a recessed pocket formed therein. The control assembly is mounted in the recessed pocket in a spaced apart relationship such that there is a gap between the control assembly and the recessed pocket, allowing air to circulate around the control assembly for keeping the control assembly and its internal circuitry cool. The control assembly includes a control panel covering the front of the recessed pocket and extending outwardly therefrom.

26 Claims, 8 Drawing Sheets



WB 002557

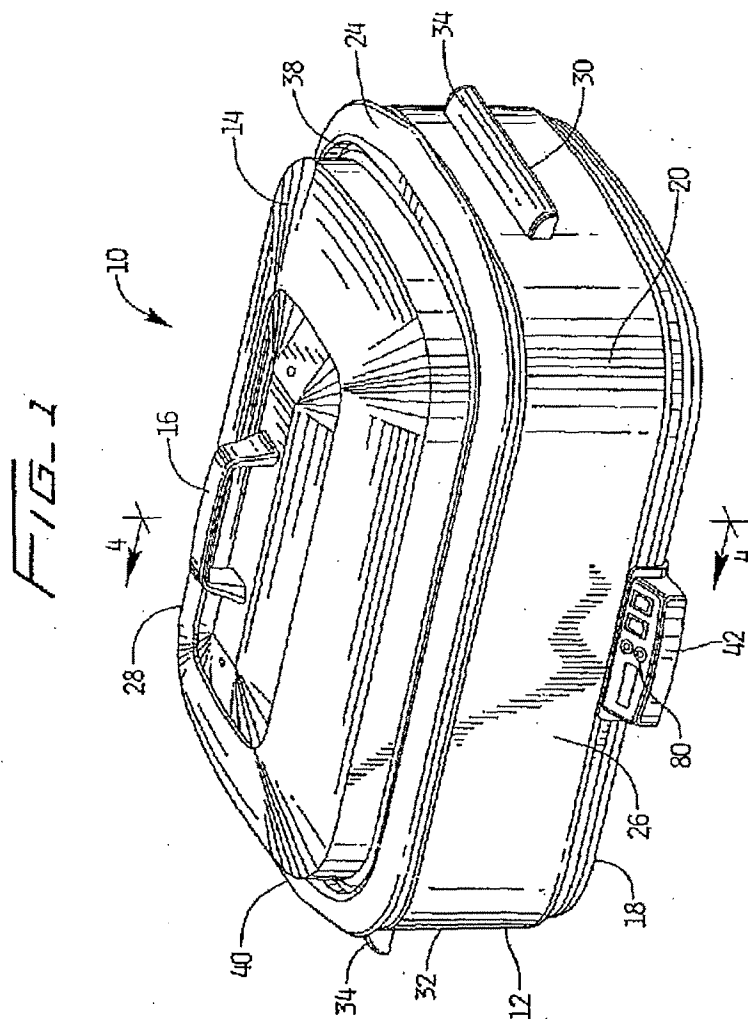
**Highly Confidential  
Attorneys' Eyes Only**

**U.S. Patent**

Mar. 26, 2002

Sheet 1 of 8

US 6,362,459 B1



WB 002558

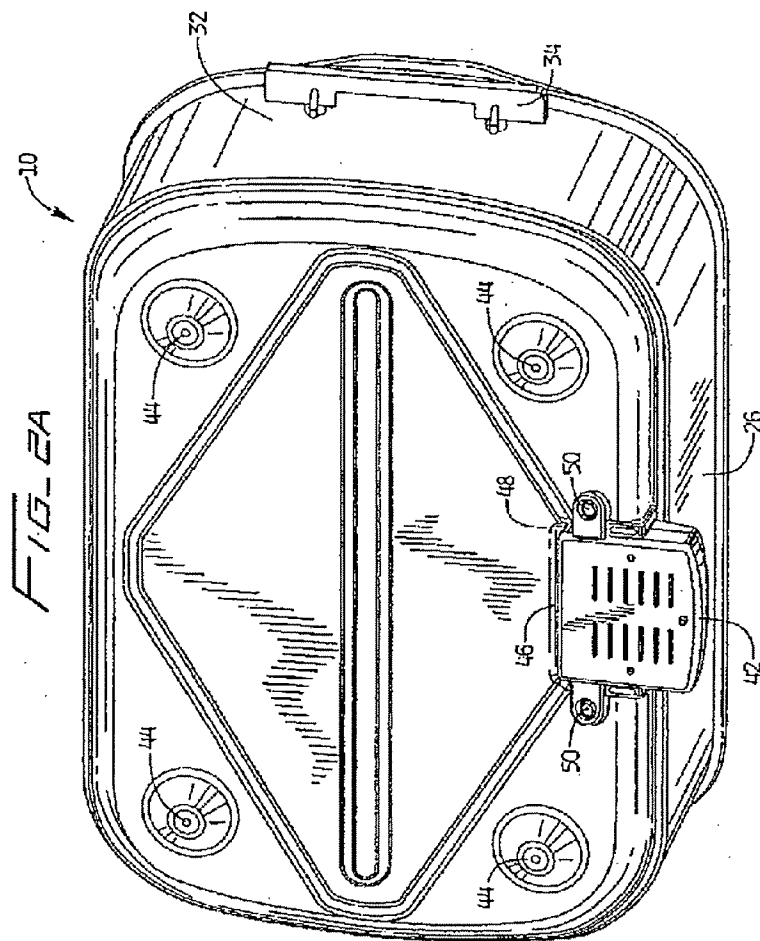
**Highly Confidential  
Attorneys' Eyes Only**

U.S. Patent

Mar. 26, 2002

Sheet 2 of 8

US 6,362,459 B1



WB 002559

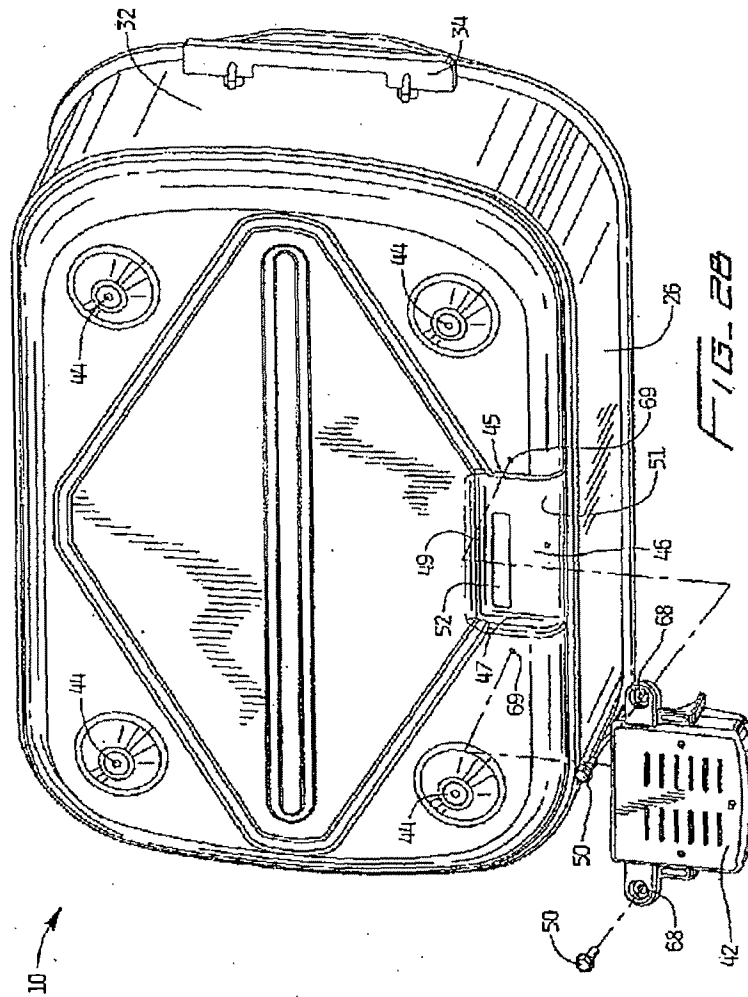
Highly Confidential  
Attorneys' Eyes Only

**U.S. Patent**

Mar. 26, 2002

Sheet 3 of 8

US 6,362,459 B1



WB 002560

**Highly Confidential  
Attorneys' Eyes Only**

U.S. Patent

Mar. 26, 2002

Sheet 4 of 8

US 6,362,459 B1

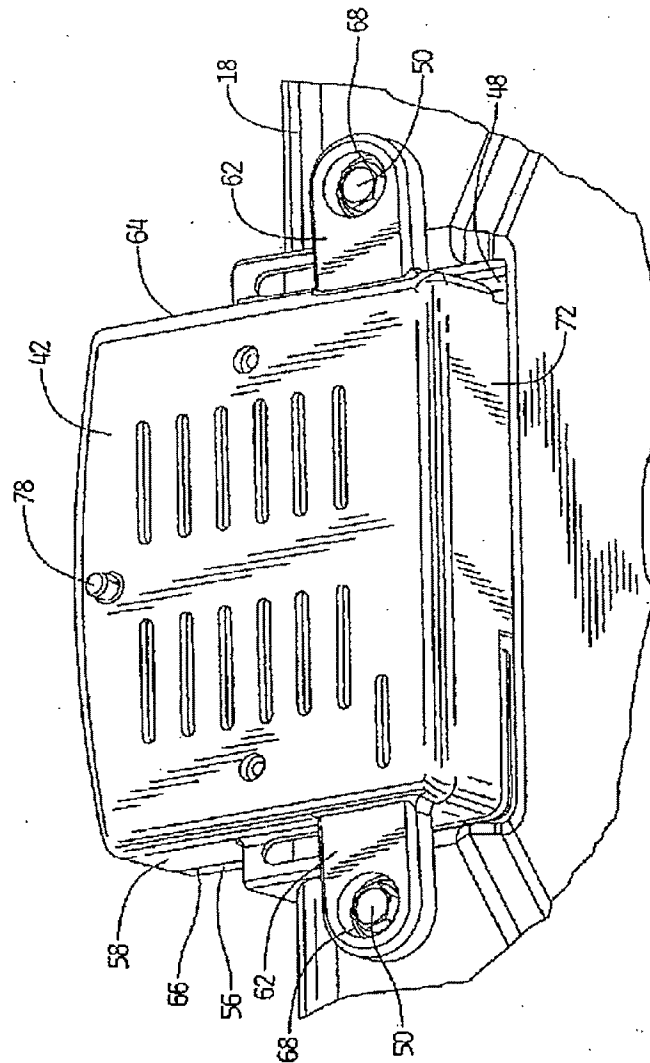
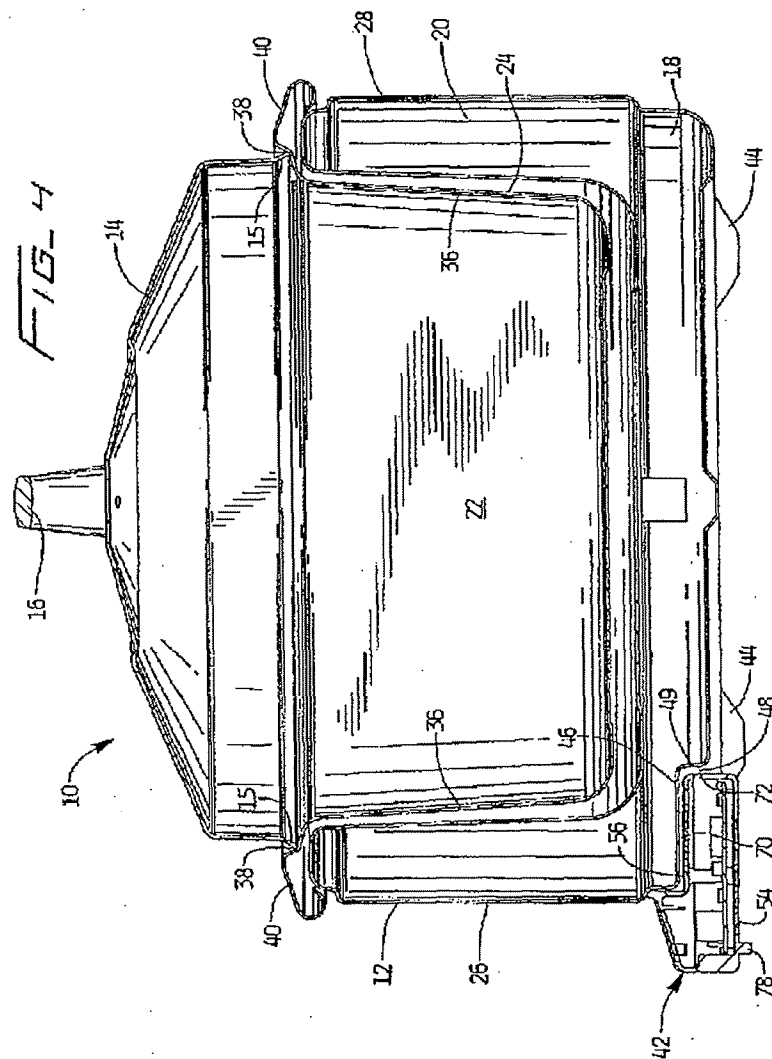


FIG. 3

WB 002561

Highly Confidential  
Attorneys' Eyes Only



WB 002562

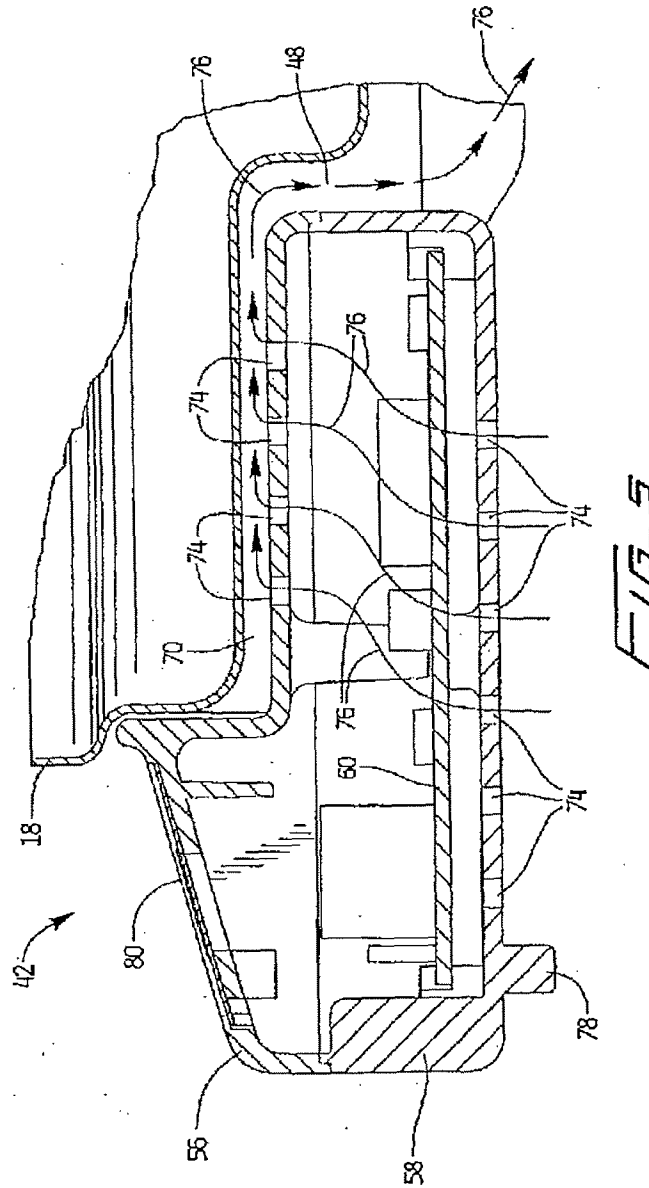
**Highly Confidential  
Attorneys' Eyes Only**

U.S. Patent

Mar. 26, 2002

Sheet 6 of 8

US 6,362,459 B1



WB 002563

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Mar. 26, 2002

Sheet 7 of 8

US 6,362,459 B1

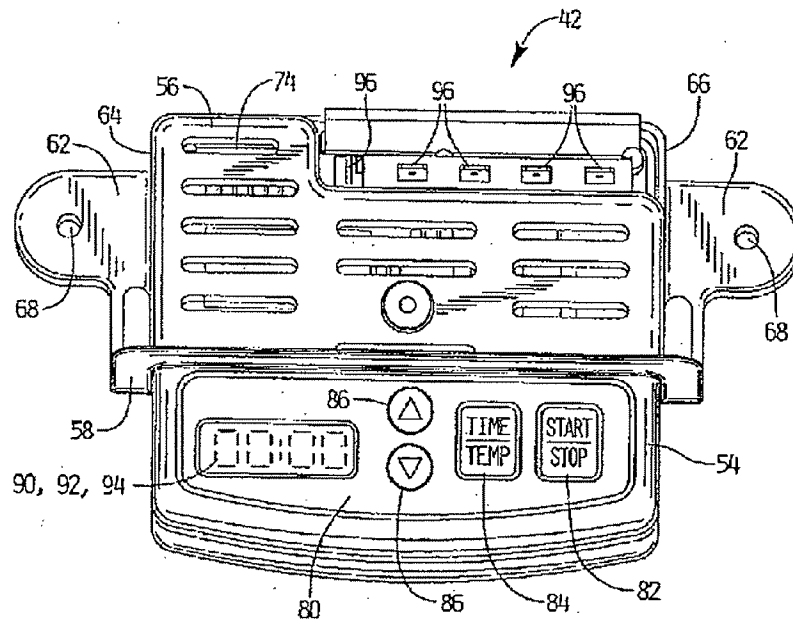


FIG. 6A

WB 002564

Highly Confidential  
Attorneys' Eyes Only

U.S. Patent

Mar. 26, 2002

Sheet 8 of 8

US 6,362,459 B1

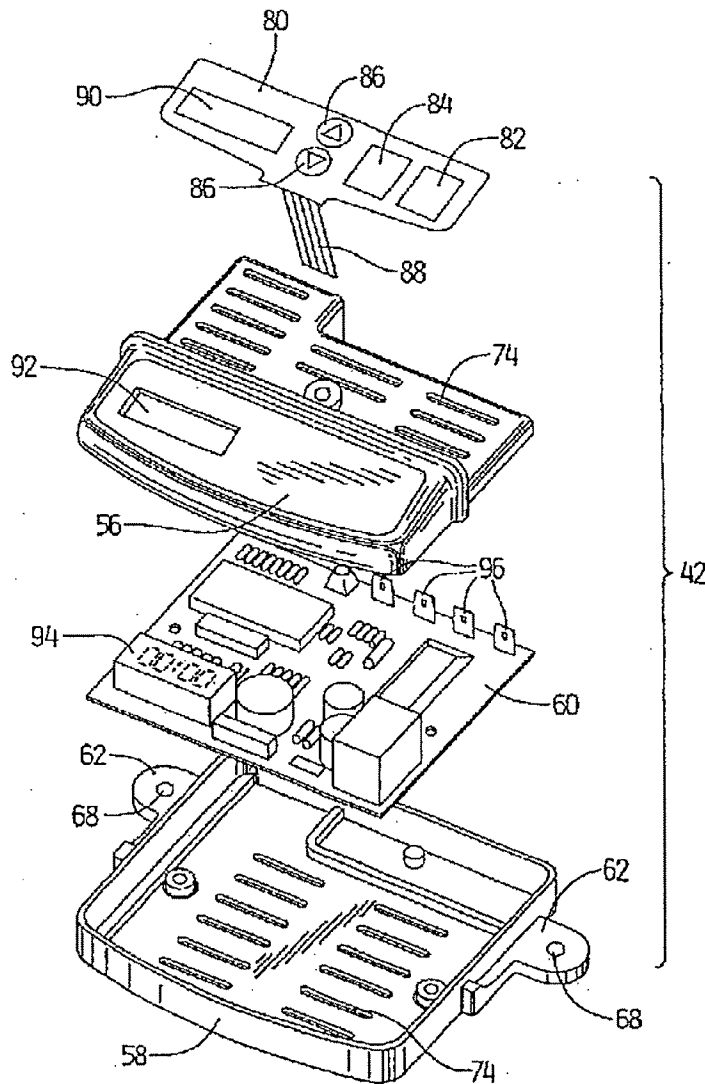


FIG. 6B

WB 002565

Highly Confidential  
Attorneys' Eyes Only

US 6,362,459 B1

# **ELECTRONICALLY CONTROLLED ROASTER OVEN WITH DIGITAL CONTROL ASSEMBLY**

## **FIELD OF THE INVENTION**

The present invention relates generally to a cooking apparatus, and more particularly to an electronically controlled roaster oven with a digital control assembly attached to the base thereof in a spaced apart relationship such that there is a gap between the assembly and the base to allow airflow around and through the assembly for cooling the electronic circuitry within the assembly.

## **BACKGROUND OF THE INVENTION**

Roaster ovens used for preparing and cooking food are well known in the art. The conventional roaster oven includes a main body and a cover that fits on the main body of the oven. The main body typically includes a bottom portion or base with sidewalls extending upwardly therefrom to create an open cavity for a cookwell to be inserted therein. Handles are typically attached at opposite ends of the outer sidewalls of the main body for ease in carrying the roaster oven. The cover also includes a handle attached to the top thereof. The cover typically rests on an upper edge or inner rim of the cookwell during cooking, and to keep food warm before serving. The cover is removed from the main body of the roaster oven during the serving of food and during cleaning.

Most prior art household electric cooking appliances, such as roaster ovens, slow cookers or crock-pots are not electronically controlled. Typically, the cooking appliance is merely plugged into an AC outlet with a power cord and turned on. The cooking temperature, if controlled at all, is controlled with a knob on the front of the appliance that will set the cooking temperature between low, medium, and high. The cooking time is generally not set or controlled by the appliance. It is most often left up to the person cooking to monitor the cooking time.

With the advent of smaller electronics and electronics packaging, these small household cooking appliances are becoming much more sophisticated and complex. In fact, electronically controlled cooking appliances with programmable cooking temperatures and cooking times are becoming more common place. However, a problem exists with locating or placing electronics on or in close proximity with a heat generating cooking appliance. The electronics must be kept cool enough to prevent failures and low reliability.

Therefore, it would be desirable to provide an electronically controlled roaster oven with a digital control assembly attached thereto such that the electronics within the digital control assembly remain cool and reliable.

## **SUMMARY OF THE INVENTION**

Therefore, in view of the problems associated with the prior art cooking appliances, it is an object of the present invention to provide a cooking apparatus, which overcomes the drawbacks of the prior art. In particular, it is an object of the present invention to provide an electronically controlled cooking apparatus with a digital control assembly attached thereto such that the electronics within the digital control assembly remain cool and reliable. It is another object of the invention to provide an electronically controlled cooking apparatus having a digital control assembly attached thereto in a spaced apart relationship, allowing airflow around the digital control assembly, keeping it cool. Another object of

the invention is to provide a cooking apparatus having a simple design for removing or channeling heat away from a digital control assembly fastened to the base of the cooking apparatus. These and other objects are met by the roaster oven of the present invention.

The present invention provides a cooking apparatus, such as a roaster oven, comprising a main body, a cover for covering the main body, and a control assembly for controlling operation of the cooking apparatus. The main body includes a base with upwardly extending sidewalls creating an open cavity within the main body of the cooking apparatus for receiving a cookwell therein. The cover includes a handle attached to a top portion of the cover. The sidewalls include handles located at opposite ends of the main body to facilitate carrying of the cooking apparatus. The cookwell includes sidewalls with an upper edge and a flange extending around the periphery of the sidewalls. The control assembly is preferably attached to the bottom of the base with a control panel extending outwardly therefrom for programming operation of the cooking apparatus.

A recessed pocket is formed in the bottom of the base for receiving the control assembly therein. The recessed pocket, formed toward the front of the bottom of the base, includes two opposed sidewalls, a rear wall, a top wall, and an open front. The control panel covers the open front of the recessed pocket, while extending outwardly therefrom. The recessed pocket is preferably larger than the outer dimensions of the control assembly, so that when the control assembly is mounted within the recessed pocket and fastened to the bottom of the base, the control assembly is in a spaced apart relationship with respect to the recessed pocket, creating a gap between the control assembly and the recessed pocket, thereby allowing airflow around the control assembly.

The control assembly includes a housing with a top portion and a bottom portion having a plurality of slotted openings extending therethrough for allowing airflow through the assembly. The gap between the control assembly and recessed pocket, and the slotted openings extending through the control assembly housing allow for convection cooling of the control assembly during operation of the cooking apparatus.

Various other features, objects, and advantages of the invention will be made apparent to those skilled in the art from the accompanying drawings and detailed description thereof.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a perspective view of a roaster oven constructed in accordance with a preferred embodiment of the present invention;

FIG. 2A is a perspective view of the bottom of the roaster oven of FIG. 1;

FIG. 2B is a perspective view of the bottom of the roaster oven of FIG. 1 with the digital control assembly removed;

FIG. 3 is an enlarged perspective view of the bottom of the digital control assembly attached to the roaster oven;

FIG. 4 is a cross-sectional view of the roaster oven taken along line 4-4 of FIG. 1;

FIG. 5 is an enlarged cross-sectional view of the digital control assembly of FIG. 4;

FIG. 6A is a front perspective view of the digital control assembly; and

FIG. 6B is an exploded perspective view of the digital control assembly.

## **DETAILED DESCRIPTION OF THE INVENTION**

Referring first to FIGS. 1 and 4, a cooking apparatus 10, such as a roaster oven, for preparing or cooking food is

WB 002566

Highly Confidential  
Attorneys' Eyes Only

US 6,362,459 B1

3 shows. The cooking apparatus 10 includes a main body 12, a cover 14, and a digital control assembly 42. The main body 12 includes a bottom portion or base 18 with sidewalls 20 extending upwardly therefrom to create an open cavity 22 for receiving a cookwell 24 therein. The cookwell 24 is preferably inserted within the open cavity 22 of the main body 12 for holding food items to be cooked in the cooking apparatus 10. The cover 14 may be mounted on the main body 12 as shown, or may be removed from the main body 12 by lifting a handle 16 attached to a top portion of the cover 14. The digital control assembly 42 is preferably attached to the bottom of the base 18 with a control panel 80 extending outwardly therefrom for programming operation of the cooking apparatus 10.

The main body 12 of the cooking apparatus 10 is shown to be rectangularly shaped with front and rear opposed sidewalls 26, 28 comprising the front and rear of the cooking apparatus 10, and two opposed end sidewalls 30, 32, which are generally shorter in length than the front and rear sidewalls 26, 28. The main body 12 of the cooking apparatus 10 may also be oval shaped, round, or square. Each of the end sidewalls 30, 32 include a handle 34 attached thereto for carrying the cooking apparatus 10. The cookwell 24 includes sidewalls 36 with an upper edge 38 and a flange 40 extending around the periphery of the sidewalls 36. The digital control assembly 42 is fastened to the bottom base 18 below the front sidewall 26.

Referring next to FIGS. 2A and 2D, illustrating the bottom of the cooking apparatus 10. The bottom of the base 18 includes a plurality of feet 44 for supporting the cooking apparatus 10 on a flat surface, and a recessed pocket 46 formed in the bottom of the base 18 for receiving the digital control assembly 42 therein. The pocket 46 is preferably located toward the front of the bottom of the base 18 and preferably sized larger than the outer dimensions of the digital control assembly 42 to create an open channel 48 between the digital control assembly 42 and the base 18. The recessed pocket 46 is preferably about 1/4 inch larger than the outer dimensions of the digital control assembly 42. The pocket 46 includes two opposed sidewalls 45, 47, a rear wall 49, a top wall 51, and an open front. The digital control assembly 42 is inserted within the pocket 46 and fastened to the bottom of the base 18 by a plurality of fasteners 50. The pocket further includes an opening 52 extending through the top wall 51 providing for electrical connections between the digital control assembly 42 and a heating element within the cooking apparatus 10. The heating element contains heating wires extending through the base 18 and sidewalls 20 of the cooking apparatus 10 which are coupled to the digital control assembly 42 through the opening 52 in the top wall 51 of the pocket 46.

FIG. 3 shows an enlarged view of the digital control assembly 42 fastened to the bottom of the base 18. The digital control assembly 42 comprises a housing 54 with a top portion 56 and a bottom portion 58 enclosing a printed circuit board 60 therein. FIG. 5, with the electronics for controlling operation of the cooking apparatus 10. The housing 54 is preferably made of a thermoplastic material. A pair of attachment arms 62 extend from opposing sides 64, 66 of the bottom portion 58 of the housing 54 for attaching the digital control assembly 42 to the base 18. Fasteners 50 extend through apertures 68 in the attachment arms 62 to screw holes 69 in the bottom of the base 18 to attach the digital control assembly 42 within the pocket 46 of the base 18. The position of the attachment arms 62 extending from the sides 64, 66 of the bottom portion 58 of the housing 54 is such that when the digital control assembly 42 is fastened

to the bottom of the base 18, a gap 70 exists between the top portion 56 of the housing 54 and the top wall 51 of the pocket 46, allowing air to circulate around the housing 54 of the digital control assembly 42, keeping it cool.

Referring again to FIG. 4, a cross-sectional view of the cooking apparatus 10 shows the digital control assembly 42 attached to the bottom of the base 18 in pocket 46. A channel 48 extends around the digital control assembly 42 between the sides 64, 66 and rear 72 of the housing 54 and the sidewalls 45, 47 and rear wall 49 of the pocket 46. A gap 70 also exists between the top portion 56 of the housing 54 and the top wall 51 of the pocket 46. The digital control assembly 42 is therefore, spaced apart from sidewalls 45, 47, rear wall 49, and top wall 51 of the pocket 46.

FIG. 4 also shows the cover 14 covering the open cavity 22 and cookwell 24 inserted within the main body 12 of the cooking apparatus 10. The cover 14 includes a flange 15 that rests on the upper edge 38 of the cookwell sidewalls 36 with the cover 14 in a closed position on the main body 12 of the cooking apparatus 10.

FIG. 5 is an enlarged cross-sectional view of the digital control assembly 42 fastened to the bottom of the base 18, as shown in FIG. 4. Both the top and bottom portions 56, 58 of the digital control assembly housing 54 include a plurality of slotted openings 74 extending therethrough for allowing airflow through the assembly 42, as indicated by arrows 76. The bottom portion 58 of the housing 54 includes a cooling fan 78 extending downwardly therefrom to substantially the same level as the feet 44 extending downwardly from the base 18 for allowing airflow under the cooking apparatus and up through the slotted openings 74 in the housing 54. The slotted openings 74 therefore, allow for convection cooling of the digital control assembly 42 during operation of the cooking apparatus 10.

FIGS. 6A and 6B illustrate enlarged and exploded views of the digital control assembly 42. As mentioned previously, the digital control assembly 42 comprises a housing 54 made up of a top portion 56 and a bottom portion 58, a printed circuit board 60 enclosed within the top and bottom portions 56, 58 of the housing 54, and a control panel 80. The control panel 80 includes a plurality of membrane switches or push buttons 82, 84, 86, 88 for programming the cooking time and cooking temperature of the cooking apparatus. The control panel 80 further includes a transparent viewing area 90, which is positioned over an opening 92 in the top portion 56 of the housing 54 for viewing an LED display 94 mounted on the printed circuit board 60. The control panel 80 is electrically connected to the printed circuit board 60 by a ribbon cable 88. In addition to the LED display 94, the printed circuit board 60 preferably also includes a microprocessor and associated circuitry for controlling operation of the cooking apparatus. The circuitry performs a slow cook function and includes a countdown timer that will automatically shut off the cooking apparatus when the programmed cooking time has expired. Electrical connections to and from the circuit board 60 are made from terminals 96 extending from the circuit board 60 through opening 52 in the base 18.

Programming and operation of the cooking apparatus 10 is initiated through membrane switches 82, 84, 86 and 88. The START/STOP push button 82 activates the cooking apparatus 10 by turning it on and off. The TIME/TEMP push button 84 is used to program the cooking times and cooking temperatures. The up and down arrow push buttons 86, 88 are used to select the cooking times and cooking temperatures after the TIME/TEMP push button 84 has been pushed. In other words, once the START/STOP push button 82 is

WB 002567

Highly Confidential  
Attorneys' Eyes Only

US 6,362,459 B1

5

pushed, turning on the cooking apparatus, the TIME-  
NUP push button 84 is pushed to select the cooking time  
using the up and down arrow push buttons 86, 88. The  
TIME/TEMP push button 84 is pushed again to select the  
cooking temperature using the up and down arrow push  
buttons 86, 88. The START/STOP push button 82 is pushed  
again to start cooking and initiate the countdown timer.  
Pushing the START/STOP push button 82 again interrupts  
the cooking and stops the countdown timer. To reactivate  
cooking and the countdown timer, the START/STOP push  
button 82 must be pushed once again. Once the cooking time  
has elapsed, the cooking apparatus automatically shuts off.  
The cooking temperature may be programmed for between  
150 and 450 degrees Fahrenheit, and the cooking time may  
be programmed for up to 10 hours.

While the invention has been described with reference to  
preferred embodiments, those skilled in the art will appre-  
ciate that certain substitutions, alterations, and omissions  
may be made without departing from the spirit of the  
invention. Accordingly, the foregoing description is meant to  
be exemplary only and should not limit the scope of the  
invention set forth in the following claims.

What is claimed is:

1. A cooking apparatus comprising:

a main body having a base at the bottom of the cooking  
apparatus with upwardly extending sidewalls, the base  
and upwardly extending sidewalls having an outer  
surface and an inner surface;  
a recessed pocket formed in the outer surface of the base;  
and

a control assembly mounted in the recessed pocket of the  
base in a spaced apart relationship such that there is a  
gap between the control assembly and the recessed  
pocket, allowing airflow around the control assembly.

2. The cooking apparatus of claim 1 wherein the recessed  
pocket includes two sidewalls, a rear wall, a top wall, and an  
open front.

3. The cooking apparatus of claim 2 wherein the recessed  
pocket is sized larger than the control assembly creating a  
channel between the control assembly and the sidewalls, rear  
wall, and top wall of the pocket.

4. The cooking apparatus of claim 2 wherein the recessed  
pocket further includes an opening extending through the  
top wall providing for electrical connections between the  
control assembly and the cooking apparatus.

5. The cooking apparatus of claim 3 wherein the control  
assembly includes a housing with a top portion and a bottom  
portion enclosing a printed circuit board therebetween with  
electronics for controlling operation of the cooking appara-  
tus.

6. The cooking apparatus of claim 5 wherein the housing  
is made of a thermoplastic material.

7. The cooking apparatus of claim 5 wherein the top  
portion and the bottom portion of the housing include a  
plurality of slotted openings extending therethrough for  
allowing airflow through the housing.

8. The cooking apparatus of claim 5 wherein the housing  
includes a pair of attachment arms extending outwardly  
from opposite sides of the bottom portion of the housing for  
attaching the control assembly to the outer surface base.

9. The cooking apparatus of claim 8 wherein the attach-  
ment arms are positioned on the bottom portion of the  
housing such that a gap exists between the top portion of the  
housing and the top wall of the pocket, allowing airflow  
around the housing.

10. The cooking apparatus of claim 1 wherein the control  
assembly includes a control panel covering the open front of  
the recessed pocket and extending outwardly therefrom.

6

11. A cooking apparatus comprising:

a main body having a base with upwardly extending  
sidewalls;

a cover for covering the main body of the apparatus, the  
cover having a top portion with a handle attached  
thereto;

a cookwell inserted within an open cavity formed in the  
main body by the upwardly extending sidewalls; and

a control assembly mounted to the base of the main body  
in a recessed pocket formed in the base such that there  
is a gap between the assembly and the base.

12. The electronically controlled cooking apparatus of  
claim 11 wherein the recessed pocket includes two  
sidewalls, a rear wall, a top wall, and an open front.

13. The electronically controlled cooking apparatus of  
claim 12 wherein the recessed pocket is sized larger than the  
control assembly creating a channel between the control  
assembly and the sidewalls, rear wall, and top wall of the  
pocket.

14. The cooking apparatus of claim 12 wherein the  
recessed pocket further includes an opening extending  
through the top wall providing for electrical connections  
between the control assembly and a heating element within  
the cooking apparatus.

15. The cooking apparatus of claim 11 wherein the control  
assembly includes a housing with a top portion and a bottom  
portion enclosing a printed circuit board therebetween with  
electronics for controlling operation of the cooking appara-  
tus.

16. The cooking apparatus of claim 15 wherein the top  
portion and the bottom portion of the housing include a  
plurality of slotted openings extending therethrough for  
allowing airflow through the housing.

17. The cooking apparatus of claim 15 wherein the  
housing includes a pair of attachment arms extending out-  
wardly from opposite sides of the bottom portion of the  
housing for attaching the control assembly to the base of the  
main body.

18. The cooking apparatus of claim 17 wherein the  
attachment arms are positioned on the bottom portion of the  
housing such that a gap exists between the top portion of the  
housing and the top wall of the pocket, allowing air to  
circulate around and through the housing.

19. A roaster oven having a main body with a base,  
upwardly extending sidewalls, and a cover with a handle  
attached to a top portion thereof, the roaster oven compris-  
ing:

a cookwell inserted within an open cavity formed in the  
main body by the upwardly extending sidewalls; and

a control assembly mounted to the base of the main body  
in a recessed pocket formed in the base such that there  
is a gap between the assembly and the base.

20. The roaster oven of claim 19 wherein the control  
assembly is spaced apart from the recessed pocket.

21. The roaster oven of claim 19 wherein the control  
assembly includes a plurality of slotted openings extending  
therethrough for allowing airflow through the assembly.

22. A cooking device comprising:

a cooking cavity having a base with upwardly extending  
sidewalls;

a cover for covering the cooking cavity;

a cookwell inserted within the cooking cavity; and

a control assembly mounted to the base of the cooking  
cavity in a recessed pocket formed in the base such that  
there is a gap between the assembly and the base.

WB 002568

Highly Confidential  
Attorneys' Eyes Only

US 6,362,459 B1

7

23. The cooking device of claim 22 wherein the control assembly is spaced apart from the recessed pocket.

24. The cooking device of claim 22 wherein the control assembly includes a plurality of slotted openings extending therethrough for allowing airflow through the assembly.

25. An apparatus for cooling electronic circuitry within a control assembly attached to a cooking device, the apparatus comprising:

a main body having a base with upwardly extending sidewalls, the base and upwardly extending sidewalls to having an inner surface and an outer surface; and

8

a recessed pocket formed in the outer surface of the base for receiving the control assembly in a spaced apart relationship thereto such that there is a gap between the control assembly and the recessed pocket, allowing airflow around the control assembly.

26. The apparatus of claim 25 wherein the control assembly includes a control panel covering the front of the recessed pocket and extending outwardly therefrom.

\* \* \* \* \*

WB 002569

Highly Confidential  
Attorneys' Eyes Only

# EXHIBIT D

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MASSACHUSETTS**

THE HOLMES GROUP, INC.,	:	
	:	
Plaintiff,	:	Civil Action No. 05-CV-11367 REK
v.	:	(Alexander, M.J.)
	:	
WEST BEND HOUSEWARES, LLC and	:	
FOCUS PRODUCTS GROUP, L.L.C.,	:	
	:	
Defendants.	:	

**HOLMES' RESPONSE TO  
WEST BEND'S FIRST SET OF INTERROGATORIES**

Plaintiff, The Holmes Group, Inc. (hereinafter "Holmes") submits the following Answers to Defendants, West Bend Housewares, LLC and Focus Products Group, L.L.C. (hereinafter collectively "West Bend") First Set of Interrogatories.

These Answers are subject to the following general objections.

**GENERAL OBJECTIONS**

Each of Holmes' responses are subject to the following objections and conditions as if such objections and conditions were fully set forth in said response. The responses do not repeat each such objection or condition.

1. Holmes objects to the Interrogatories to the extent they request information not relevant to the subject matter of the pending action.

2. Holmes objects to the Interrogatories to the extent they are unreasonably cumulative or duplicative, or seek information obtainable from some other source that is more convenient, less burdensome or less expensive.

3. Holmes objects to the Interrogatories to the extent they request information that is protected from disclosure by the attorney-client privilege, the attorney work product doctrine, the protection afforded to materials prepared in anticipation of litigation or any other applicable privilege or immunity. Nothing contained in these objections and responses is intended to be, or in any way constitutes, a waiver of any applicable privilege, immunity or doctrine. Any document or thing withheld on the grounds of an applicable privilege or immunity will be identified on a separate privilege log. Holmes objects to identifying documents generated since the inception of this lawsuit by or at the direction of trial counsel, as such identification is likely to reveal work-product and/or attorney-client privileged information.

4. Holmes objects to the disclosure of confidential information and the production of documents containing confidential information until the Court enters an appropriate Protective Order.

5. Holmes objects to the Interrogatories to the extent they impose obligations on Holmes that go beyond the requirements set forth in the Federal Rules of Civil Procedure and Local Rules for the District of Massachusetts.

6. Holmes objects to West Bend's definitions and instructions to the extent they impose obligations on Holmes that go beyond the requirements set forth in the Federal Rules of Civil Procedure and Local Rules for the District of Massachusetts.

7. As discovery in this case is ongoing, Holmes reserves the right to supplement its objections and responses to West Bend's requests.

**SPECIFIC OBJECTIONS AND RESPONSES**

Subject to the foregoing General Objections, Holmes responds as follows:

**Interrogatory No. 1**

Identify each claim of the Holmes patents-in-suit that you contend is infringed by West Bend Housewares or Focus and state in detail your infringement contentions and claim construction by completing a claim chart comparing each West Bend Housewares cooker you contend infringes any of the Holmes patents-in-suit with each asserted claim of each Holmes patent-in-suit, on a limitation-by-limitation basis, describing the complete factual and legal bases for any contention by Holmes that any claim limitation is present in the West Bend Housewares cooker(s) you accuse of infringement, including whether each element is present literally or present under the doctrine of equivalents, whether the alleged infringement is direct or indirect, and identifying the documents and things that you contend supports your contentions and claim construction, and each person having knowledge of any factual bases for the response.

**Response to Interrogatory No. 1**

Holmes objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Subject to and without waiver this objection and the General Objections, Holmes responds as set forth in Exhibit A attached hereto.

**Interrogatory No. 2**

Identify the field of art and characteristics of a person having ordinary skill in the art for the Holmes patents-in-suit.

**Response to Interrogatory No. 2**

Subject to the General Objections, Holmes responds that the field of art is slow-cooker appliances and a person having ordinary skill in the art relative to the claimed inventions in the

Holmes patents-in-suit is an engineer having at least a Bachelor of Science degree and/or a designer having several years experience in the design, development and manufacture of slow-cooker appliances.

**Interrogatory No. 3**

For each West Bend Housewares cooker identified in response to Interrogatory No. 1, describe the circumstances under which any person at Holmes first had knowledge of such product, describe any analysis, examination or investigation conducted by Holmes, or on Holmes' behalf, of such product that provided the basis for Holmes' infringement contentions, describe the circumstances of such analysis, examination or evaluation, identify any documents referring or relating to such analysis, examination or evaluation, and identify the person(s) involved.

**Response to Interrogatory No. 3**

Holmes objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Subject to and without waiver of this objection and the General Objections, Holmes responds that on or about June, 2005, Holmes obtained a West Bend 6-Quart Electronic Cookery™ Cooker, Model 84386 from Wal-Mart. Holmes' counsel of record conducted an infringement investigation of the West Bend product. The investigation included analysis of the structure and operation of the West Bend product compared to the claims of the Holmes patents-in-suit.

**Interrogatory No. 4**

Separately for the subject matter of each claim of the Holmes patents-in-suit, state the date on which the subject matter of each claim was first conceived, including identification of the person(s) who conceived of such subject matter and any and all documents corroborating or otherwise related to the dates of such conception, and the date on which the subject matter of each claim was first reduced to practice, including identification of the person(s) who reduced to practice such subject matter and any and all documents corroborating or otherwise related to the dates of such first reduction to practice.

**Response to Interrogatory No. 4**

Subject to the General Objections, pursuant to Fed. R. Civ. P. 33(d), upon entry of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested can be derived or ascertained.

**Interrogatory No. 5**

Identify each product (whether experimental or otherwise) developed, manufactured or produced for, or by, Holmes that embodies any claim of the Holmes patents-in-suit, including the name and internal nomenclature of each such product, the patent claim(s) it embodies, the supplier or source of its constituent elements, if and when each such product was marked in accordance with 35 U.S.C. § 287, and identify the persons who are most knowledgeable about each such product.

**Response to Interrogatory No. 5**

Holmes objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Subject to and without waiver of this objection and the General Objections, pursuant to Fed. R. Civ. P. 33(d), upon entry of a

Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested can be derived or ascertained.

**Interrogatory No. 6**

For each product identified in response to Interrogatory No. 5, describe in detail the circumstances, including the date(s) and person(s) involved, of the first sale, first offer for sale, first solicitation or inquiry for possible future sale of that product, as well as any solicitation, inquiry, or agreement for possible testing of that product, and the first disclosure, presentation, demonstration, or use of that product in front of anyone not then employed by Holmes.

**Response to Interrogatory No. 6**

Holmes objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Subject to and without waiver of this objection and the General Objections, pursuant to Fed. R. Civ. P. 33(d), upon entry of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested can be derived or ascertained.

**Interrogatory No. 7**

Identify in detail any and all evidence of secondary indicia of non-obviousness that Holmes contends supports or relates to the non-obviousness of any claims of the Holmes patents-in-suit, including: whether the claimed inventions, or any product that embodies or uses any claimed invention, has been commercially successful; whether the Holmes patents-in-suit have been licensed to others; whether the claimed invention have been copied by others; whether anyone has praised, criticized or discussed the significance of the claimed inventions; whether the claimed inventions satisfied a long felt need in the industry; whether others tried and failed to make the claimed inventions; and whether the claimed inventions achieved unexpected results,

and any and all other evidence that Holmes contends supports or relates to the non-obviousness of the Holmes patents-in-suit, including identification of all documents and persons with knowledge concerning such contentions.

**Response to Interrogatory No. 7**

Holmes objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Subject to and without waiver of this objection and the General Objections, Holmes states that its programmable slow cookers covered by the Holmes patents-in-suit have been commercially successful, satisfy a long felt need in the industry, have been copied by others and that Holmes may license the Holmes patents-in-suit to others. Pursuant to Fed. R. Civ. P. 33(d), upon entry of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested to support Holmes answer can be derived or ascertained.

**Interrogatory No. 8**

Separately for each Holmes patent-in-suit, describe in detail Holmes' contention that West Bend Housewares and Focus have willfully infringed, including identification of all documents supporting such contentions and any and all persons with knowledge or information of such contentions.

**Response to Interrogatory No. 8**

On October 14, 2004, counsel for Holmes sent a letter to West Bend placing them on notice of Holmes U.S. Patent Nos. 6,573,483 and 6,740,855 (the Holmes patents-in-suit). On October 26, 2004, West Bend's counsel, Martin Stern of Michael Best & Friedrich, LLP advised counsel for Holmes that they represented West Bend in intellectual property matters. On April 22, 2005, counsel for Holmes advised Mr. Stern that Holmes had been granted U.S. Patent

No. 6,872,921. Notwithstanding the actual notice of the Holmes patents-in-suit, West Bend imported, distributed and sold slow cookers which infringe the Holmes patents-in-suit in willful, wanton disregard of the Holmes patents-in-suit. Pursuant to Fed. R. Civ. P. 33(d), upon entry of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested to support Holmes answer can be derived or ascertained.

**Interrogatory No. 9**

State for all the Holmes Programmable Cookers sold from the date of first sale to the present: (a) gross dollar sales, (b) profits, and (c) number of units sold, and identify each person or entity who purchased or placed an order for Holmes Programmable Cookers and, for each such person or entity, state the date of each purchase or order, state the total dollar and unit amounts each person or entity purchased or ordered, and identify all documents that reflect the dollar and unit amounts purchased or ordered.

**Response to Interrogatory No. 9**

Holmes objects to this interrogatory as unduly burdensome and not relevant to the issues in this case. Holmes further objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Subject to and without waiver of this objection and the General Objections, pursuant to Fed. R. Civ. P. 33(d), upon entry of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested can be derived or ascertained.

**Interrogatory No. 10**

Identify all manufacturers of the Holmes Programmable Cookers and all persons and entities approached by Holmes to manufacture the Holmes Cookers and the date(s) each was approached.

**Response to Interrogatory No. 10**

Holmes objects to this interrogatory as unduly burdensome and not relevant to the issues in this case. Holmes further objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Subject to and without waiver of this objection and the General Objections, pursuant to Fed. R. Civ. P. 33(d), upon entry of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested can be derived or ascertained.

**Interrogatory No. 11**

Identify each person, whether or not employed by Holmes, who was involved in or knows about the conception, creation, design, or production of any catalog, packaging, advertising, marketing, promotional or sales material for the Holmes Programmable Cookers, and with respect to each such person, state in detail the nature of such involvement, or the extent of such knowledge.

**Response to Interrogatory No. 11**

Holmes objects to this interrogatory as unduly burdensome and not relevant to the issues in this case. Holmes further objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Subject to and without waiver of this objection and the General Objections, pursuant to Fed. R. Civ. P. 33(d), upon entry

of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested can be derived or ascertained.

**Interrogatory No. 12**

Identify the circumstances under which Holmes first learned of the existence of the West Bend Housewares patents-in-suit, including the date and manner in which Holmes came to know of the existence of the West Bend Housewares patents-in-suit and identify all persons with knowledge thereof and all documents relating thereto.

**Response to Interrogatory No. 12**

Holmes objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Notwithstanding this specific objection and the General Objections, Holmes states that it first became aware of the West Bend patents-in-suit upon service of West Bend's Answer and Counterclaims. Pursuant to Fed. R. Civ. P. 33(d), upon entry of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested to support Holmes answer can be derived or ascertained.

**Interrogatory No. 13**

Explain in detail Holmes' contentions that any claim of the West Bend Housewares patents-in-suit is invalid under 35 U.S.C. §§ 102, 103 and 112, including identification of the documents that Holmes contends supports such contentions, the complete legal and factual basis for such contentions, and each person having knowledge of any factual basis or bases.

**Response to Interrogatory No. 13**

Each of the West Bend patents-in-suit are invalid under 35 U.S.C. § 102(b) in view of at least sales of oval slow cookers more than one year before the earliest effective filing date of the

West Bend patents-in-suit. Specifically, each of the following Rival® Crockpot® brand slow cookers were sold in the United States in 1997, Model Nos. 3745-GR; 3745-PS and 3755-HG. Pursuant to Fed. R. Civ. P. 33(d), upon entry of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested to support Holmes answer can be derived or ascertained.

Each of the West Bend patents-in-suit are invalid as being obvious over prior art round slow cookers. Holmes investigation regarding the invalidity of the West Bend patents-in-suit is ongoing. As further information becomes available, Holmes will supplement its response.

**Interrogatory No. 14**

Explain in detail Holmes's contention that the West Bend Housewares patents-in-suit are not infringed, including any identification of all facts supporting this contention and the persons most knowledgeable of those facts.

**Response to Interrogatory No. 14**

To date, West Bend has identified Rival® Crockpot® brand slow cooker Model Nos. 3730 and 37351 as allegedly infringing each of the West bend patents-in-suit. With respect to Holmes Model No. 3730, the ornamental appearance of the slow cooker is more similar to the prior art slow cookers identified in response to Interrogatory No. 13 than to that shown in each of the West Bend patents-in-suit. Thus, Holmes is practicing the prior art and therefore cannot infringe the West Bend patents-in-suit.

Furthermore, Holmes Model 3730 differs from the claimed design in several significant ways. With respect to U.S. Patent No. D444,993 (the '993 patent) the Holmes Model No. 3730 slow cooker includes a lid and crock which cooperate to form a shape significantly different from the shape of the lid and crock shown in Figs. 2-5 of the '993 patent. Additionally, the

Holmes Model No. 3730 includes a crock having a lip which differs in shape from that shown in Fig. 6 of the '993 patent. Lastly, Holmes Model No. 3730 includes a bottom surface having only three (3) feet coupled to a conical surface, a large oval indentation, a central circular indentation including a cylindrical fastener and a plurality of holes around an outer periphery of the bottom surface which differs in appearance from that shown in Fig. 7 of the '993 patent. Accordingly, Holmes Model No. 3730 is not substantially similar in overall appearance to the claimed design in the '993 patent and, therefore, does not infringe.

With respect to U.S. Patent No. Des 434,266 (the '266 patent), each of the differences set forth above also apply with the following additional differences. Holmes Model No. 3730 includes a top portion of the handle having a rounded periphery and a convex top portion. The convex top also includes a series of ornamental indentations around the outer periphery of the handle top. The '266 patent claims a handle having a top portion which is flat from a side view and whose outer periphery slopes down and inward from the top surface. Accordingly, for the reasons set forth with respect to the '993 patent as well as those set forth above, Holmes Model No. 3730 does not infringe.

With respect to U.S. Patent No. D444,664 (the '664 patent) each of the differences set forth above with respect to the '993 and '266 patents apply with the following additional differences. Holmes Model No. 3730 includes a bottom having only three (3) feet, wherein the shape of each foot includes a conical shaped portion leading to a cylindrical shaped portion which is substantially different from the four (4) cylindrically shaped feet shown in Figs. 2-5 and 7 of the '664 patent.

With respect to Holmes Model No. 37351, the ornamental appearance of the slow cooker is more similar to the prior art slow cookers identified in response to Interrogatory No. 13 than to

that shown in each of the West Bend patents-in-suit. Thus, Holmes is practicing the prior art and therefore cannot infringe the West Bend patents-in-suit.

Additionally, Holmes Model 37351 differs from the claimed design in several significant ways. With respect to U.S. Patent No. D444,993 (the '993 patent) the Holmes Model No. 37351 slow cooker includes a lid and crock which cooperate to form a shape significantly different from the shape of the lid and crock shown in Figs. 2-5 of the '993 patent. Furthermore, Holmes Model No. 37351 includes a crock having a lip which differs in shape from that shown in Fig. 6 of the '993 patent. The lid also includes a hole therein with a cylindrical washer surrounding the hole. Lastly, Holmes Model No. 37351 includes a bottom surface having only three (3) integrally formed, conically shaped, feet two (2) circular indentations each including a cylindrical fastener, and a plurality of holes in the bottom surface which differs in appearance from that shown in Fig. 7 of the '993 patent. Accordingly, Holmes Model No. 37351 is not substantially similar in overall appearance to the claimed design in the '993 patent and, therefore, does not infringe.

With respect to U.S. Patent No. Des 434,266 (the '266 patent), each of the differences set forth above also apply with the following additional differences. Holmes Model No. 37351 includes a top portion of the handle having a rounded periphery and a convex top portion. The convex top also includes a series of ornamental indentations around the outer periphery of the handle top. The '266 patent claims a handle having a top portion which is flat from a side view and whose outer periphery slopes down and inward from the top surface. Accordingly, for the reasons set forth with respect to the '993 patent as well as those set forth above, Holmes Model No. 37351 does not infringe.

With respect to U.S. Patent No. D444,664 (the '664 patent) each of the differences set forth above with respect to the '993 and '266 patents apply with the following additional differences. Holmes Model No. 37351 includes a bottom having only three (3) integrally formed, conically shaped feet which is substantially different from the four (4) cylindrically shaped feet shown in Figs. 2-5 and 7 of the '664 patent.

Holmes further reserves the right to supplement its response based upon West Bend's identification of any alleged points of novelty of the West Bend patents-in-suit in its response to Holmes' First Set of Interrogatories.

**Interrogatory No. 15**

Identify all Holmes slow cookers circular or oval in shape and made, made for, sold, or offered for sale by Holmes on or after November 28, 2000, and for each, state the date each was first sold or offered for sale, the date each was first presented to a person not then employed by Holmes, and the date each was first advertised or otherwise promoted in marketing or other materials.

**Response to Interrogatory No. 15**

Holmes objects to this interrogatory as unduly burdensome and not relevant to the issues in this case. Holmes further objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Subject to and without waiver of this objection and the General Objections, pursuant to Fed. R. Civ. P. 33(d), upon entry of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested to support Holmes answer can be derived or ascertained.

**Interrogatory No. 16**

State whether Holmes intends to rely upon evidence of good faith reliance upon opinion of counsel in defense to the allegation that its alleged infringement of the West Bend Housewares patents-in-suit was willful and (a) identify all documents referring to or relating to any opinions of any counsel the subject of which is in whole or in part infringement or invalidity or unenforceability of the West Bend Housewares patents-in-suit; (b) identify all attorneys consulted on the subject of infringement, invalidity or unenforceability of the West Bend Housewares patents-in-suit and (c) identify all employees, agents or representatives of Holmes who consulted with attorneys on the subject of the West Bend Housewares patents-in-suit.

**Response to Interrogatory No. 16**

Holmes objects to this interrogatory to the extent that it seeks information protected by the attorney/client privilege and/or work product immunity. Holmes further objects to this interrogatory as being premature. At the appropriate time, should Holmes decide to rely upon opinion of counsel, pursuant to Fed. R. Civ. P. 33(d), upon entry of a Protective Order by the Court, Holmes will produce non-privileged business records from which the information requested can be derived or ascertained.

**VERIFICATION OF ANSWERS**

I, Timothy Gallogly, Esq., an authorized agent of JCS/THG, LLC d/b/a The Holmes Group ("Holmes") declare that I have read the foregoing answers on behalf of Holmes, that I have read the foregoing answers and subscribe to the same on behalf of Holmes, that said answers were prepared with assistance and advice of counsel and other representatives of Holmes, that said answers, subject to inadvertent or undiscovered errors, are based on, and

therefore, limited by the records and information still in existence, presently recollected and thus far discovered in the course of preparation of these answers; that consequently, Holmes reserves the right to make changes in the answers if it appears at any time that omissions or errors have been made therein or that more accurate information is available; and that subject to the limitations set forth herein, that said answers are true to the best of my knowledge, information and belief.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct. Executed on March \_\_\_\_, 2006.

JCS/THG, LLC d/b/a  
THE HOLMES GROUP


By: \_\_\_\_\_  
Name: Timothy Gallogly, Esq.  
Title: Vice-President and  
Associate General Counsel

The undersigned subscribes to the foregoing objections.

Respectfully submitted,

JCS/THG, LLC d/b/a  
THE HOLMES GROUP  
By its Attorneys,

Dated: March 8, 2006

  
\_\_\_\_\_  
Charles R. Hoffmann, Esq. (*Pro Hac Vice*)  
CRHDocket@hoffmannbaron.com  
Glenn T. Henneberger, Esq. (*Pro Hac Vice*)  
GTHDocket@hoffmannbaron.com  
HOFFMANN & BARON, LLP  
6900 Jericho Turnpike  
Syosset, New York 11791-4407  
Telephone: (516) 822-3550  
Facsimile: (516) 822-3582

and

Nicholas J. Nesgos (BBO No. 553177)  
nnesgos@pbl.com  
Jennifer Finger (BBO No. 641830)  
jfinger@pbl.com  
Joseph W. Corrigan (BBO No. 647393)  
jcorrigan@pbl.com  
Posternak Blankstein & Lund LLP  
Prudential Tower, 800 Boylston Street  
Boston, Massachusetts 02199-8004  
Telephone: (617) 973-6100  
Facsimile: (617) 367-2315

**CERTIFICATE OF SERVICE**

I hereby certify that a copy of the foregoing HOLMES' RESPONSE TO WEST BEND'S FIRST SET OF INTERROGATORIES has been served via e-mail, this 8th day of March, 2006 upon the following:


Erik Paul Belt  
Berg & Sunstein LLP  
125 Summer Street  
Boston, Massachusetts 02110  
Tel: (617) 443-9292  
Facsimile: (617) 443-0004  
ebelt@bronsum.com

Of Counsel:

Charles A. Laff  
Martin L. Stern  
Michael Best & Friedrich LLP  
401 N. Michigan Ave. – Ste. 1900  
Chicago, Illinois 60611  
Tel: (312) 222-0800  
Facsimile: (312) 222-0818  
calaff@michaelbest.com  
MLStern@michaelbest.com

and

Michael E. Husmann  
Joseph T. Miotke  
Michael Best & Friedrich LLP  
100 E. Wisconsin Ave.  
Milwaukee, Wisconsin 53202  
Tel.: (414) 271-6550  
Facsimile: (414) 277-0656  
mehusmann@michaelbest.com  
jtmiotke@michaelbest.com

  
\_\_\_\_\_  
Glenn T. Henneberger

# EXHIBIT E

30(b)6 DEPOSITION OF THE HOLMES GROUP, NOVEMBER 16, 2006  
CONFIDENTIAL - ATTORNEYS' EYES ONLY

Page 1

CONFIDENTIAL - ATTORNEYS' EYES ONLY

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MASSACHUSETTS

C.V. No: 05-CV-11367WGY

\* \* \* \* \*  
THE HOLMES GROUP,  
Plaintiff,  
vs.  
WEST BEND HOUSEWARES and FOCUS  
PRODUCTS GROUP, LLC.  
Defendants.  
\* \* \* \* \*

30(b)6 DEPOSITION OF THE HOLMES GROUP,  
a witness called on behalf of the  
Defendants, pursuant to the Massachusetts  
Rules of Civil Procedure, before Janet  
Chase, a Certified Shorthand Reporter and  
Notary Public in and for the Commonwealth of  
Massachusetts, at the Radisson Hotel, 11  
Beaver Street, Milford, Massachusetts, on  
Thursday, November 16, 2006, commencing at  
9:05 a.m.

ESQUIRE DEPOSITION SERVICES - CHICAGO  
312.782.8087 800.708.8087 FAX: 312.704.4950

30(b)6 DEPOSITION OF THE HOLMES GROUP, NOVEMBER 16, 2006  
CONFIDENTIAL - ATTORNEYS' EYES ONLY

Page 52

1  
2  
3  
4  
5  
6  
7  
8 **REDACTED**  
9  
10  
11  
12  
13  
14  
15

16 Q. Okay. In the complaint in this case Holmes  
17 has alleged that West Bend is willfully  
18 infringing Holmes's patents. What is the  
19 basis for the allegation of willfulness?

20 A. We know that they were aware that our  
21 product existed.

22 Q. Okay.

23 A. And we know that they were aware that we had  
24 patents on our products.

ESQUIRE DEPOSITION SERVICES - CHICAGO  
312.782.8087 800.708.8087 FAX: 312.704.4950

30(b)6 DEPOSITION OF THE HOLMES GROUP, NOVEMBER 16, 2006  
CONFIDENTIAL - ATTORNEYS' EYES ONLY

Page 53

1 Q. Okay.

2 A. And that they were informed of that --

3 Q. Okay.

4 A. -- by us.

5 Q. All right.

6 A. And that they still came out with the  
7 product.

8 Q. Any other basis?

9 A. I think that's it. I'd have to defer most  
10 to legal counsel on that one if there's  
11 anything more than that.

12

13

14

15

16

17

**REDACTED**

18

19

20

21

22

23

24